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THE CULTURE OF THE ABDOMEN

THE CURE OF OBESITY AND CONSTIPATION

By

F. A. HORNIBROOK

PREFACE BY

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PREFACE

I BELIEVE that this book, so carefully compiled, will be of the greatest service to the public. It deals with one's most valuable asset, namely, health, without which success in any form brings no real satisfaction. Mr. Hornibrook has spent his life in the study of physical education, and he has succeeded in producing a work in which he describes, in the simplest and the clearest manner, how it is open to everybody to be vigorous and healthy. His methods are excellent in their simplicity, and are most effectual. To my own certain knowledge he has treated quite a large number of people most successfully.

W. ARBUTHNOT LANE.

LONDON, W. 1

FOREWORD

ALTHOUGH it may be true that "there is nothing new under the sun," it frequently happens that we go through life without having seen all that the sun shines upon. When we come across some of these things they strike us as new, or different in some way. The reader will find described in simple and forceful language a system of exercise original in conception, simple in application, positive in results, and founded on the movements of the prehistoric dance. The author's lifelong devotion to bodily cultivation and all that pertains to it eminently qualifies him to speak with more than an ordinary degree of authority. I feel confident, from what I have seen of his methods, that his claims are not based on mere theory alone.

W. H. HORNIBROOK, F.R.C.S.,
D.P.H. (Irel.).

OPINIONS

R. Tait McKenzie, M.D., LL.D., Professor of Physical Education, University of Pennsylvania, author of "Exercise in Education and Medicine," etc., writes:—

"The purpose of all systems of exercise dealing with people of middle age centres around a stimulation of the abdominal muscles and the alimentary tract. Practically all our occupations become increasingly sedentary with age. The active man is driven behind the desk, and the woman of means has lost those occupations which involved bending and twisting of the trunk. For this reason Mr. Hornibrook's book comes at an opportune time, and it is interesting to see how he has been able to adapt to our use those exercises which more primitive peoples have developed spontaneously. This book should have a wide range of usefulness."

Arnold Bennett, the celebrated English author, wrote:—

"I know a middle-aged man who suffered for thirty years from ill-health. He was a regular dyspeptic. One day he bought a book by Mr. F. A. Hornibrook, 'The Culture of the Abdomen.' The book set forth a short series of exercises. The fellow began to do the exercises. They occupied but seven minutes per day. In three months he had lost thirty pounds avoirdupois. His dyspepsia had vanished. I can vouch for the case. For the man was myself."

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"In lazy Apathy let Stoics boast,
Their Virtue fix'd, 'tis fix'd as in a frost,
Contracted all, retiring to the Breast;
But strength of mind is *Exercise*, not *Rest*."

"Essay on Man."—POPE.

THE
CULTURE OF THE ABDOMEN

PART ONE

CHAPTER I

INTRODUCTION

If we consider the human body from the purely physical standpoint, we are at once faced with the seeming enigma that the more enlightened man becomes the less perfect becomes his corporeal self: but there is really no enigma about it at all. Speaking generally, it may be said that in man's latest phase his intelligence is developed and specialised, while his bodily functions are deteriorating in inverse proportion.

Modern conditions preclude the possibility of a life of physical culture, but there are few situations where its total neglect is either obligatory, or excusable.

Between the trained athlete and the sedentary bookworm lies a great gulf across which age eventually throws a bridge where both meet in middle life, both burdened with enfeebled bodies, adipose deposits, pendulous bellies, constipated bowels and impaired mental activity. The athlete and the bookworm are the extremes, but to nearly all middle age brings the reckoning of mismanaged and outraged digestive apparatus. The ponderous speech of the portly magnate finds its echoes in the intestinal rumblings of his ponderous paunch, and awed ignorance acclaims wind for wisdom.

In the annals of the early voyagers we find repeated allusions to the symmetrical proportions and graceful movements of the natives with whom they were brought

in contact. For example, Christopher Columbus, in his diary of 1492, says:—

"At daybreak, great multitude of men came to the shore, all young and of fine shapes, very handsome . . . they were straight-limbed without exception, and not with prominent bellies but handsomely shaped."

Amongst such peoples the same holds good at the present time where they have escaped the demoralising effects of civilising influences; though it is true that all are not equally well formed.

It is obvious that we must look beyond purely racial peculiarities to explain these differences. One fact strikes the observer at once, viz., the general tendency to obesity and the enlargement of the abdomen in middle life amongst civilised peoples, their absence amongst the uncivilised.

A partial explanation, it is claimed, is furnished by the practice of native dances as a form of bodily cultivation by the uncivilised races and the neglect of any similar form of exercise by the civilised peoples.

In writing this book I have endeavoured to omit all superfluous explanations and unnecessary theorising. My object has been to design a system which will cultivate those parts of the body that, owing to man's posture and to his civilised habits, are the most neglected parts of his body, albeit the most important, viz., the muscles of the abdomen and the organs of digestion and excretion. I may add that practical experience shows that the average man and woman soon become tired of ordering their physical lives wisely and well by conscious effort. Therefore, it is of supreme importance to cultivate in them *correct posture*, which in the course of a few months becomes an unconscious habit of body. Correct posture and the occasional retraction of the abdomen during the day (as explained more fully later on) will maintain to a great extent the improvement gained by this course of exercise, although naturally it is of very much greater advantage to continue the few minutes' exercise required

as a daily routine. Considering the supreme importance of the abdominal region and its organs, it is surely not too much to ask any intelligent person to devote rather less than seven minutes per day to a system which will certainly enable him to look well and feel well, and *be well.* Good health not only adds to the joy of life; it is a decided asset in the business world, improving one's appearance, and postponing the onset of signs of old age.

In the following pages it will be necessary to take a brief excursion over the somewhat wide field of general principles, but the predominant feature, the keynote of the argument, as the reader will discover, is summed up in the word *posture.* For is not exercise a series of postures; yea, more, are not thought and speech the preliminary formation of all postures?

CHAPTER II

SEWAGE SYSTEM OF THE BODY

In an article entitled "The Sewage System of the Human Body," contributed to *American Medicine*, of May, 1923, Sir Arbuthnot Lane advances powerful arguments in support of the theory that the terrible scourge of cancer may be directly the result of intestinal sanitation. He draws a striking analogy between the sewage system of a town and the gastro-intestinal system of the body. He shows how the blockage of a main sewer has as a direct result far-reaching consequences, disastrous to the dwellers in the area which is drained normally by the sewer.

As houses situated on the higher ground suffer later, and perhaps in different degree, so also the various organs of the body suffer differently in time and kind from the effects of constipation. Constipation being nothing more nor less than interference with the outflow of the individual's sewage, the mere indication of the parallel might almost be considered sufficient. But when it is borne in mind how widespread is this vice of civilisation, and how casual, and almost contented, is the general attitude towards it, the urgency of the subject becomes apparent. If the ordinary man or woman were confronted for the first time with the offensive contents of a constipated large bowel, and were told that the body he or she thinks so much about, decks out in fine raiment, and fears to part from more than he fears anything else in the world, was the casket of such a jewel the shock and disgust might almost prove fatal. Lifelong association with these things has bred the contempt of familiarity, the oblivion

to the painfully obvious. Sir Arbuthnot Lane's rapier thrust through this armour of complacent forgetfulness lets a flood of light into the dirty corners of our human dust-bins.

The food which is broken up in the mouth, and subjected to the digestive action of stomach and small intestine, parts with its nutritive principles in a liquid absorbable form as it is moved onwards until it reaches the large gut, or colon. Here the excess of watery fluid is absorbed and returned to the system, while the refuse, for which we have no use, is slowly passed onwards, to be eventually ejected. During its transit through the stomach and small intestine, few, if any micro-organisms are present in the healthy person; but when it passes into the colon it becomes a mass of microbes, which multiply exceedingly. As long as the walls of the gut remain healthy no harm seems to accrue to the individual from his teeming population, but the balance is subject to breakdown from various causes.

The liver acts as a filter and refinery for all the fluid absorbed from the intestines, and prepares such materials as pass through it for admittance to the general blood stream. Thus, the tissues of the body are renewed and nourished, the waste products finding their way out by means of the urine, fæces, sweat and breath. In the complex chemical and bacteriological processes occurring in the large intestine many poisonous substances are formed, and the continual absorption of these, as happens in chronic constipation, has very serious results for the individual.

One cannot live over a cesspit in good health. How much more difficult to remain well if we carry our cesspit about inside us—especially when, as so often happens, the cesspit is unpleasantly full!

Even as in civilised communities where cesspool "sanitation" so-called is the practice, the emptying of these horrible receptacles is a work of infrequent and hurried execution, a work of darkness and stealth, so also

amongst all civilised peoples the emptying of the individual cesspools is a matter of shame, to be performed in secret, and at as long intervals as mechanical requirements permit.

Food is taken several times daily, often too frequently, and too freely and of unsuitable quality; but, as a rule, one occasion only is permitted for the ejection of its waste materials. And remember that all the time this lagging tenant of the bowel is retained the conditions favouring evil are at work; heat, moisture, nitrogenous refuse, darkness and micro-organisms. The slow poison factory is in full swing, and its output is turned into the highways and byeways of the body.

All the organs and tissues do not react alike to these malign influences. In some cases the nervous system bears the brunt of the attack, as evidenced by headaches, sleeplessness, irritability of temper, and diminished mental vigour; in others, the circulatory system suffers, changes taking place in the blood vessels of brain, liver, kidneys, and the muscular apparatus, leading to high blood pressure, apoplexy, Bright's disease, rheumatism, jaundice, and muscular weakness; in others again the reproductive functions are deranged, as noticed in many of the disorders of women; while the skin gives to all who care to read the open avowal of a closed outlet for dirt.

Now this chronic poisoning, with its attendant deterioration of body tissue and organs, though not in itself a proved cause of cancer, may, and probably does, predispose to its occurrence when certain structures are the seat of recurring irritation. In parts of the bowel where, owing to anatomical details (the description of which is outside the scope of this book), difficulty is presented to the passage of hard and putrid fæcal matter, the conditions are favourable to the growth of cancer, since the irritation is constant, and the membranes unhealthy in consequence. The frequent occurrence of cancer in these situations supports the view taken.

Another source of injury is to be found in the potent

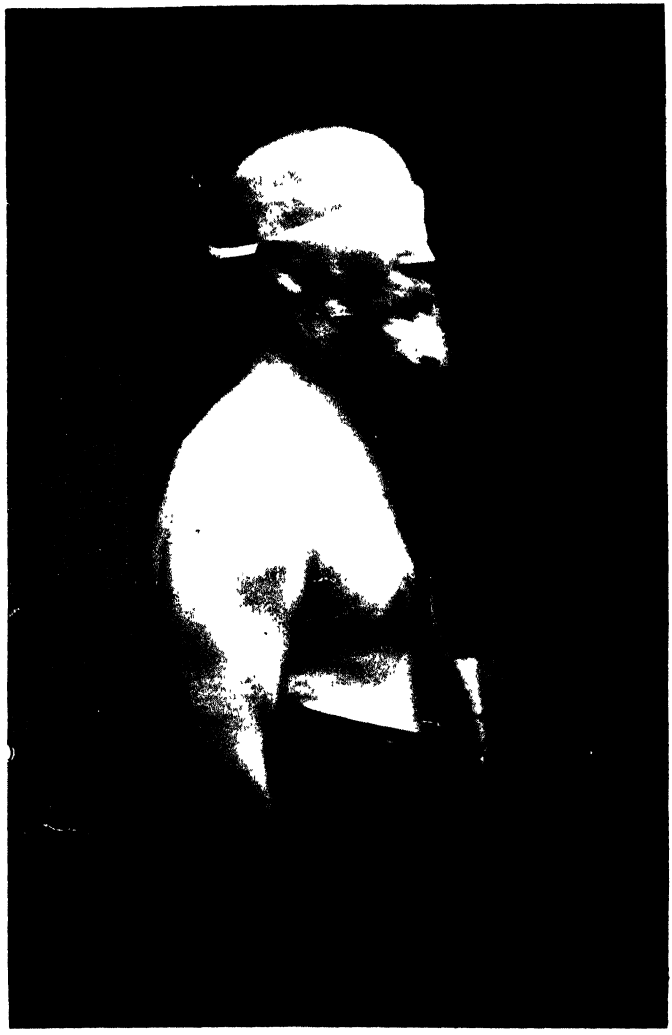


FIG. 3.—Depicts an older subject where the decrease in girth after my treatment is indicated by the loose waist belt. This man was 65 years of age.

FIG. 1.—Shows the general external appearance of the body in faulty attitude, with dropped internal organs (Enteroptosis).

FIG. 2.—Shows the same subject with the errors corrected after a course of training by myself. Note the improved musculature and pose.

purgative drugs employed by persons who suffer from difficult bowel action. It is to be noted that the subjects of cancer of the large intestine are those of muscular and vigorous habit of body. In those persons the bowel shares the general muscularity, with the result that by its very over-development the mischief is aggravated ; more force is exerted in the propulsion of the hardened matter than would occur in normal cases, additional muscle bands develop and kink the tube, constrictions are accentuated, and much friction and damage are caused at these points by the hard fæcal lumps.

In another class of cases, where general enfeeblement is present, constipation also exists ; but here the picture is different. Instead of the strong and muscular gut, with its kinks and narrowings, we have a flaccid dilated tube, incapable of pushing its contents onwards. All the internal organs are inclined to drop downwards and crowd into the pelvis, setting up a state called *enteroptosis*, or dropping of the intestines. The intestine being unable to empty itself, the unfortunate sufferer must have recourse to frequent enemata to remove the stagnant morass which is fermenting in his belly. His digestion is a mockery, gurgling and groaning in hopeless disability, his breath reminiscent of a Limburger cheese, and his general outlook upon life a pessimistic wail. In these people it is rare to see cancer of the bowel, the factor of injury being absent.

That beauty is but skin deep is only half a truth. If it draws its nourishment from poisoned sources it must wilt and vanish. Truly it were better to say that beauty starts from the stomach and ends at the epidermis. And between these two lie all the potentialities of health and beauty of mind and body. The external world reflects the mentality of the observer. Look at it with jaundiced eyes, and it gives back the yellow tinge of misery ; smile at it with the clear vision of health, and it invites you into its rose gardens and sunshine.

A negative support of the constipation-cancer theory

is furnished in the fact that amongst many of the uncivilised races the disease is unknown. Thus, Sir Arbuthnot Lane reports that Colonel R. McCarrison, I.M.S., "never saw one case of asthenic dyspepsia, of gastric, or duodenal ulcer, of appendicitis, or mucous colitis, or of cancer" in the Himalayas, where he did an enormous practice during nine years. Again, Dr. Hoffman did not see "a single case of cancer" during seven months amongst native Indians and mixed bloods in South America, nor could he hear of one, although he made careful search.

These two instances are not exceptional. The absence of cancer in uncivilised peoples is a well-authenticated fact. Its rapid increase of late years probably cannot be attributed to a better diagnosis alone. Modern conditions are effecting many changes, and the increasing amount of malignant disease appears to be one. If by an intelligent interpretation and application of natural sanitary principles it is possible to place the individual in a better position to meet an insidious enemy, no small achievement can be claimed. It will be my endeavour to explain how this may be done by a system of physical exercise localised to the abdominal area.

CHAPTER III

THE WHITE MAN'S BURDEN

THE faulty bowel habit of the individual is attributable to the ignorance of those responsible for his upbringing, and constitutes the initial error. It is true that there are people who are constipated from birth by inheritance, or by departure from the normal, but such cases are exceptional. "Regular habits" of evacuation in infancy and childhood often meant regular suppression of the natural desire to empty the bowel. The infant was "held out" and expected to get rid of its fæces at such times as the nurse or mother considered proper, or found convenient. The child had by precept and example acquired the matutinal squeeze as the correct and only obligation. Such an undesirable "regularity" became a fixture by the time adolescence supervened. The smattering of elementary physiology and hygiene almost universal amongst school-keepers and school-teachers confirmed the pernicious habits impressed on the plastic juvenile. Time was deemed wasted when spent at stool, whilst the rigid punctuality demanded at prayers, or meals, often curtailed or postponed the function of defæcation. Until quite recently the young female was in worse plight than her brothers, as she was taught to conceal the very fact that she had a secretory apparatus of any kind, and it was *de rigeur* to suppress any manifestation of discomfort or uneasiness unless veiled by the purdah of the water closet.

The old adage that says, "As the twig is bent, the tree is inclined," is peculiarly apt here; the twig bent in constipation becomes the trunk inclined in the same direction, and it is very difficult to straighten it.

Much money, time and thought are expended upon the food until it reaches the stomach, after which it is as completely forgotten as a deceased benefactor unless it turns in its grave and excites remorse. The disposal of its refuse is perfunctory and infrequent, and it retaliates by giving all the trouble it can before leaving. Athletes usually recognise the importance of keeping the bowel action healthy, but their periods of bowel training frequently coincide with their periods of specialised training, and are discontinued when the latter are suspended; the result of this is that the system becomes poisoned in the intervals and is prone to degenerative changes on their cessation. It is quite the exception to see a man of middle age, whose early years were devoted to athletics, retain anything of his former grace and activity. Such men usually become corpulent, have large appetites, high blood pressure, irritable temperament, and a loaded colon, and die comparatively young. It is almost a truism to say that it is of much greater importance to empty the bowel regularly than to fill the stomach. Untutored man has better bowel morals than his cultured brother. He empties his bowels frequently and regularly, and because of the rapidity of his intestinal movements and the character of his food his motions are usually soft.

The ideal to be aimed at is an emptying of the gut at periods corresponding to the meals. The meal taken at any hour should have an empty stomach to receive it and a clean and uninterrupted tube for its passage to the anus. This can only be achieved by having such bowel regularity and frequency as above indicated. When we remember that *normal* stomach digestion requires from two to four hours, small intestine digestion about twelve hours, and large intestine an uncertain period of from twelve to twenty-four hours, we perceive at once that the action of the bowel relative to the meals taken is relative only to meals taken long before. In fact, we might compare the intestinal tract to an underground railway track, where the several meals represent the trains following each other

at stated intervals. When the time table is upset collisions or blocks occur and the system is thrown out of order.

The loaded colon is actually the white man's burden. The colon, or large intestine, begins in the lower right region of the belly in a sac-like end into which the small intestine empties itself.

At this part of the colon the vermiform appendix is also to be found. This is a short blind-ended tube with a very small lumen. In some of the lower animals it is an important organ, but in man it is merely vestigial. Its importance, as everyone knows, lies in the fact that it is subject to dangerous inflammation. This is probably frequently set up by the passage into it of decomposing fæcal matter from an unhealthy and loaded colon.

The colon then passes upwards until it reaches the under surface of the liver, where it bends at a right angle and crosses the abdomen to the left side, where it bends again under the spleen, and then passes down to the left lower region of the abdomen. At this spot it drops into the pelvis, being altered in shape as it becomes the rectum. It is not a simple round tube like the small intestine which enters it at its commencement. It is about 4 inches across, and is gathered up into a series of sacculations, or bulgings, by three bands of muscle fibre that pass along its entire length. From its shape it will be seen that the fluid matter from the small intestine will not be able to pass through it as rapidly as if it were a simple tube. The doubling up of its wall creates a number of pouches, the divisions between which act like little weirs, or dams, impeding the flow from pouch to pouch. This slowing down of the current enables much of its fluid part to become absorbed, so that the intestinal content gradually gets thicker until finally it reaches the rectum as a soft mass. Now we see here the whole mechanism of intestinal poisoning due to a loaded colon. First, the more fluid parts are absorbed into the blood through the lymphatic vessels, and if any pernicious substances are con-

tained in solution in the fluid they gain entrance to the body. Secondly, as the material (fæces) becomes drier it has a tendency to stagnate in the pouches of the gut and finally lodges there. This may go on until the greater part of the bowel is coated inside with a layer of half-dried fæces, which assumes the form of hard lumps in the pouches. A track may persist in the middle of all this deposit, through which such portions of the intestinal contents pass on towards the rectum, leading the individual to believe that the bowel actions are normal while, in reality, he is walking about with a putrefying mass of ordure in his colon, the decomposition of which is poisoning him constantly with its chemical products.

It is curious how alarmed people become when their olfactory organs are assailed by a bad smell, yet are unperturbed when they carry the malodorous material itself about inside them and breathe its sublimated essence over their friends. The foul breath that originates in the constipated colon is the silent witness of neglected bowels. Many persons, on being questioned about their bowel functions, readily assert that "they are not constipated as they take opening medicine every day." They do not appear to realise that they contradict themselves. The amount of purgative medicines consumed daily passes belief. One English firm of manufacturing chemists alone sold over 70,000,000 tablets of cascara in one year, and this only represents a part of the total amount of unnecessary irritant put into the bowels of the British people. The white man did not take up his burden knowingly and of choice; it is the result of a combination of circumstances—eating and drinking, exercise and rest, habits of constipation, business worry and faulty hygiene.

Over-eating is one of the chief, if not the chief, cause of the physical deterioration accompanying the onset of middle age. A certain increase of weight and a certain loss of youthful elasticity are as much a part of growth as the passing from infancy to manhood.

The following excerpt from Dr. Leonard Williams's

work, "Middle Age and Old Age," * pp. 7 and 8, puts this clearly :—

"It is regarded as natural and physiological for a person to have achieved a considerable gain in weight by the time he reaches forty, and even insurance companies, which are necessarily merely materialistic, consider a gain of a stone between twenty-five and fifty to be perfectly normal. When we consider that this increment represents an excess of intake over output, and that the storage of the excess represents an enormous amount of unnecessary labour on the part of the digestive and assimilating organs, it should scarcely surprise us that the said organs tend to wear out early."

Probably the greatest obstacle to reform in personal hygiene is encountered in the disinclination to be shaken out of the groove of habit. It is easier to exist in laziness than to live in activity. The idea of curtailing some indulgences and embarking on a career of abstinence and discipline assumes the form of a *pons asinorum*, and it is in very truth a bridge over which asses will not venture. The settled programme of heavy meals far in excess of the body's needs, the constant whip of alcohol, the sedentary existence, perhaps interrupted by ill-judged and spasmodic outbursts of energy, and the enforced emptying of the bowels by cathartics to dissipate "liver attacks," sum up the physical life of a large section of the middle-aged men of business. Give them instead a rational dietary, cut down the alcohol, exchange the easy chair for the easy exercise, and discard the liver pills for the belly exercises: their outlook upon, and their expectation of life, are changed from irritable lassitude and a short perspective to energetic optimism and a remote old age.

* "Middle Age and Old Age," by Leonard Williams, M.D., Oxford Medical Publications.

CHAPTER IV

BODY CULTIVATION

AMONGST Europeans, bodily culture has been, and to a great extent still is, a side issue, having for its aim the attainment of excellence in some form of sport which is either pursued as a means of livelihood, or as a purely personal ambition. With many so-called native races, physical culture is as much a part of their existence as mental culture is with us. That they have more time at their disposal for the care and development of their bodies is beside the mark. The old dictum, *mens sana in corpore sano*, is greater wisdom, and describes a better state than is to be found in a brilliant intellectual with an unwholesome body, for if the brain be cultivated at the expense of the whole body, the price is too high. Specialisation of training is not physical culture any more than the watering of a cabbage patch is general farming. The arm muscles may be brought into superb form, while the legs remain spidery, or even paralysed. The cycle track rider has well-developed legs, and often the chest of a cobbler. The wrestler and the boxer are brought into as perfect muscular condition as possible, to be worshipped or damned by the huddled crowd, who gloat in ecstasy or scream in disappointed rage as their pecuniary interests synchronise with the oscillations of the contest. Here two men provide all the physical culture demanded by many thousands. In other spheres of sport the same holds true; the professional few furnish vicarious laurels and emotions at a fixed price per seat. In the Services, physical culture occupies an important place in the general training, but even here there is much to be desired—mass production

methods, born of military tradition and limited by regulations, under the supervision of instructors themselves the product of the system, can but perpetuate the type. In this instance it should be remembered that the material is the best obtainable, being composed of selected individuals.

Ball-room dancing is regarded by its devotees as the best of all exercises. The healthy individual can certainly derive amusement and exercise therefrom, but for the underfed, effete and jaded victims of fashion it yields little beyond excitement and additional fatigue, the atmosphere of the dance hall contributing in no small measure.

In direct contrast to this, we observe the dance systems of natives. Inherent in these dances is the subconscious effort to make every part of the body participate in outward manifestations of energy and movement, and the native mind early recognised that when the abdomen and buttocks took up voluntary and regularised muscular training the whole body reacted beneficially. Such dances will be found to embrace a system of physical culture rhythmic in action and far-reaching in results beyond anything discoverable in the spasmodic and jerky movements of occidental muscle training.

In the five words, "muscle rhythm *versus* muscle jerk," there is summed up the whole difference, the whole philosophy of physical culture as between civilised and native man. The latter, concentrating his attention on his belly, impresses upon it a motility and dignity that give it preeminence over the rest of his body. His creed might be epitomised by saying, "Take care of the belly and the rest of the body will take care of itself." If he sometimes puts food into his stomach that we should consider disgusting, he is certain to get rid of its waste products in the shortest possible time commensurate with complete digestion; there is no loaded colon, no pendulous belly for him. Regular and complete evacuation of semi-solid stools is his daily habit, while the civilised man has much travail

in inducing his flabby abdomen to part with the hard and formed motions that linger in his toneless intestine. When the food is almost exclusively animal, the stools are small and usually formed; when vegetable matter is the staple, the meals are necessarily large and the stools bulky and soft.

The urinary and reproductive organs naturally share in the increased physiological activity taking place in the abdomen during certain dance movements.

Where body culture amongst natives, as, for instance, the New Zealand Maori, reached a high state of perfection, we find nothing haphazard or perfunctory about it. With these people the dance was developed along rational lines and in an ordered sequence. Thus we have—

(1) Vibration, having for its object the loosening of the body;

(2) Breathing exercises, which ensured a supply of oxygen to the tissues;

(3) Body movements, centred about the abdomen, which exercised a stimulating effect on the viscera, thereby promoting bowel action.

(4) Vibration, to ensure complete relaxation of the recently active muscles, and to promote rest.

There is overwhelming evidence in support of my thesis that deterioration of the middle-aged is primarily due to defective bowel action of long standing, dependent upon a neglected and enfeebled musculature. The outward and visible signs are constantly before us, but the loss of mental vigour and clarity is more imperceptible and not usually associated with the cause. If we commiserate with a friend because he has a liver attack he may be gracious, but if we tell him that the contents of his guts are getting into his brain he certainly will not. The truth is generally unpalatable; in this case it is assuredly offensive.

Constipation, whether attended by obesity or not, is generally attributable to lack of abdominal muscular activity. The bowel, being a muscular tube, if healthy,

FIG. 4.—A group of Fijian pupils of mine whose splendid physique scarcely needs emphasising. The ease of posture in both seated and standing attitudes is well shown.

[*Facing p.* 16.

FIG. 5.—In this illustration there is depression of chest, protrusion of abdomen, with excessive deposit of fat, and accentuation of lumbar curve.

readily responds to stimuli, such as the presence of food within it, or the pressure exerted upon it from without by the action of the abdominal muscles, or the friction of the hand, a manœuvre constantly employed by the nurse when a child suffers from wind colic. It cannot be denied that the bowel is able to move its contents onward independently of any stimulating effect from the abdominal walls. We see this in greatly enfeebled invalids and paralytics, though such people readily suffer from indigestion and flatulent distension. Furthermore, no amount of abdominal movement could induce any bowel action if the intestine itself were paralysed; but these statements do not in any way weaken the general argument.

Excessive deposit of fat is a departure from health; it points to a loss of balance between intake of nutriment and its consumption. Where the amount of food taken is in excess of the requirements it becomes stored up in the tissues in the form of fat, which acts mechanically as a drag on the body, the increasing weight of which demands greater muscular effort to move it. The local deposition of fat interferes with the functions of the organs embedded in it, the heart muscle is weakened and incommoded, the abdominal viscera are weighed down, respiration is impeded, and the protuberant belly hides the overweighted feet. Excessive fat is more frequently a retribution than a dispensation. It can be avoided or diminished by intelligent living, viz., moderation in diet and constant movement. By constant movement I mean the retraction and relaxation of the belly wall, combined with rotation or undulation frequently carried on during the day, as explained elsewhere.

Muscle or flesh is composed of microscopic cells, somewhat the shape of an elongated and pointed cigar. These cells lie side by side, and overlap each other, being closely adherent. They have the inherent quality of contractability, whereby they become shorter and thicker. Thus each muscle cell may be said to be a muscle in miniature.

When a muscle contracts, it becomes shorter and harder, but its total bulk does not alter. The contraction is induced by a message sent through a nerve from the central nervous system. The nerves divide into exceedingly minute filaments, which are distributed amongst the muscle cells. Movement caused by muscle action involves contraction of some, relaxation of other, muscles. For instance, if we bring a bending (flexor) muscle into action, we must at the same time cause relaxation of an extending muscle to just the degree required to permit of the action being properly performed; but it must be remembered that muscles never act singly, a group or groups being involved in the simplest movements. When at rest, muscles are in a state of balanced tension; there is no slack to gather up before they come into action, they are always ready to respond instantly when called up by the head office.

It is common knowledge that by constant use muscle becomes larger and harder, and on that foundation of imperfect knowledge have been built up the various erroneous systems of bodily culture seen in gymnasia all over the world. These systems have, as their aim, group or regional development, the attention being chiefly focussed upon the limb groups, while the trunk is ignored. Here the body does, indeed, act as a trunk; it sways as the tree trunk sways in a gale, but it has little or no movements intrinsic to it, such swaying movements are impressed upon it by the inertia of the limbs. If we take any exercise reputedly beneficial for the body muscles we find that the feet are fixed, and the body swung antero-posteriorly or laterally, the arms being employed in flail-like movements at the same time. Such movements involve much stooping, which determines blood to the brain, the bending at the waist line increases the congestion by interfering with the free flow of blood through the great vessels in the abdomen, which in turn increases the blood pressure, a very serious consideration for those approaching middle life. The mental concentration is

directed to the general swing movements and the necessity of preserving the equilibrium, the abdominal muscles are to a great extent quiescent and certainly not stimulated by the will, their action being limited to supporting the weight of the viscera, while the whole strain of swinging the body is thrown upon the muscles of the back and buttocks.

Now in absolute contrast to this will be found my system of *abdominal muscle training*, based upon the body-dance exercises of native races. Here the trunk is the centre of attention, the will is concentrated upon the movements of its most motile area, while the limbs play a subsidiary part. The immediate result is that the flow of blood is facilitated through the large vessels, lessening rather than increasing the blood pressure; the heart's action is stimulated instead of being impeded, the breathing is deepened, and a feeling of exhilaration and buoyancy takes the place of tumultuous heart action and distressed breathing. At the same time the bowels are stimulated by the kneading and squeezing to which they are subjected by the actively contracting and relaxing abdominal muscles.

It may be somewhat difficult to believe that more muscle action can be obtained in the abdominal wall by a man standing easily and apparently immobile than by one executing involved gymnastic evolutions, but it is an easily demonstrable truth. Another advantage of this system is that the whole will effort can be localised in one particular area of the abdomen, and when control is obtained, the amount of rotary, undulatory, and retractive movement possible is positively startling.

YOUR WAIST LINE IS YOUR LIFE LINE

CHAPTER V

WEIGHT *VERSUS* BULK

In the words "eternal vigilance" the whole spirit of bodily care is contained, but let it not be thought that such a vigil is apt to become wearisome, or impossible. In a surprisingly short time it becomes a habit of the subconscious mind, and the acquirement of the habit is easier than the attainment of an improved golf handicap. If we give a very small alms to Nature she returns the gift with a manifold bounty, but if we consistently flout her, she wearies of us and eventually punishes. When we neglect our muscles and send them debased coin in the form of impure blood, we have enfeeblement and fat deposit for receipt. The occasional exercises we are considering serve to keep the tone good and thus are a constant antidote to constipation, but the development of a really good general condition requires more than these. In another part of this book will be found the teaching to that end. It is common knowledge that disordered digestion frequently has as one of its symptoms distension of the stomach and bowels with gas. This is partly due to the fermentative changes in the food, partly to the swallowing of air, and partly to loss of muscle tone in the intestine. If the individual be burdened with fat at the same time he is apt to suffer acute distress at times, and may even die suddenly owing to the mechanical pressure exerted by the distended viscera upon his already enfeebled heart. Many cases of sudden death among the middle-aged are due to these causes—the death certificate says "heart failure," which certainly is the immediate cause, but Fat and Gas are the parents of the failure.

There is a more or less general relation between weight and bulk, but bulk is occasionally deceptive. In cases where the weight appears somewhat too low for the bulk we find that much of the latter is due to enlargement of the abdomen dependent upon gaseous distension. Such bulk is rapidly diminished by simple measures, such as adjustment of the diet, suitable exercises and regulation of the bowels. The varying waist line measurement accompanying these conditions gives evidence of what might be termed temporary bulk, and is the difference between the man in a state of intestinal comfort and in a state of flatulent distress. When his temporary bulk is reduced he feels better and looks better and is better-tempered, but his weight is not appreciably affected. The bulk caused by fat deposit apart from frame and muscle bulk takes time to reduce, but Nature will do that for him if he persists in living as he ought in the matters of diet and exercise.

CHAPTER VI

POSTURE

In this age of scientific progress it is curious that our ideals concerning man's figure, posture, and gait should be based on the product of the drill sergeant's activities. The Noah's ark figures of the parade ground are not one whit less ridiculous than the fantastic goose-step of the Germans. Contrast the easy bearing, grace of movement, and general muscular activity of any of the native races, such as the Zulus, Polynesians, or Red Indians. I never saw any soldiers walk so easily and so well as the Fijians. They are magnificent men and hold their bodies superbly.

Picture in the mind's eye the position of a soldier standing at attention and the position of any native man, such as a Fijian. In the former the back is "hollowed" and the chest thrust forwards and upwards in the attempt to make the man as like a pouter pigeon as possible. This hollowing of the back naturally forces the abdomen forward, to counteract which the belly muscles are held in a state of tonic contraction, taking their pull from the held-up ribs above and the pelvic brim below. Such a position becomes fatiguing very quickly. The freedom of chest movement being restricted, inspiration is interfered with, and the individual can only maintain his unnatural position by a mental effort, the duration of which depends on circumstances. Even the military martinet has to own a limitation to his authority over men's bodies, and complies with Nature's demands by giving the order to "march easy," when the parade ground is superseded by the open road.

In the Polynesian we see the attitude adopted by man

Hana

FIG. 6.—The faulty attitude usually adopted by civilised man, showing pelvis tilted downwards and forwards.

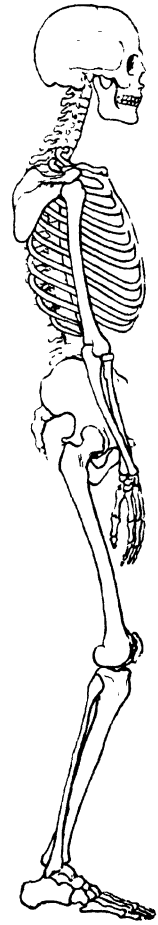


FIG. 7.—The skeleton of man when in position shown in Fig. 6.

[*Facing p.* 22.

Hann

FIG. 8.—The military position at attention. Note the pouter-pigeon chest, hollow back, and protruding buttocks, this last due to downward tilting of pelvis.

Underwood

FIG. 9.—Note the ease of attitude of the Polynesian native shown here, where the reverse conditions obtain.

untrammelled by geegaws and trappings of civilisation. Here the shoulders appear to drop downwards and slightly backward; the ribs are not held up, the back is not hollowed; and the abdomen maintains itself in a somewhat flattened form, almost like the inner tube of a motor-car tyre held up when removed from the tyre and partially deflated. In this position there is complete mobility of the chest; hence respiration is performed unconsciously and perfectly. The freedom of head, neck and shoulder movements allowed by the easy position of the chest contributes largely to alertness and comfort, and reduces fatigue to a minimum. As the abdomen shares the responsibility of the respiratory phenomena to a considerable extent, it is obvious that its condition has direct relation to the chest. There is neither sagging nor protuberance, therefore the functions of digestion will be performed with the same physiological ease as those of respiration. And when we remember how dependent on the efficient performance of these processes are the other functions of the body, we see the imperative necessity of placing them under the best possible conditions.

Consider now the posture usually adopted by the town dweller, the man of sedentary habits, whose business has little or nothing to do with the welfare of his body. Here it will be noticed that the head is carried in the peering position; chest contracted by the forward drop of the shoulders and depression of the breast-bone; the lumbar spine bent in the opposite direction to that known as "hollow"; and the belly lax and more or less protuberant. This is the natural consequence of habit and environment, fatigue and pre-occupation; and is largely responsible for many of the physical troubles which begin to crowd upon the man of early middle life.

There is a well-known aphorism—more apt than elegant—which says that "after forty men put on weight in front, and women behind." This is so universal that it is regarded as inevitable; but it frequently is the corollary of life habits of eating and drinking and neglect of exercise.

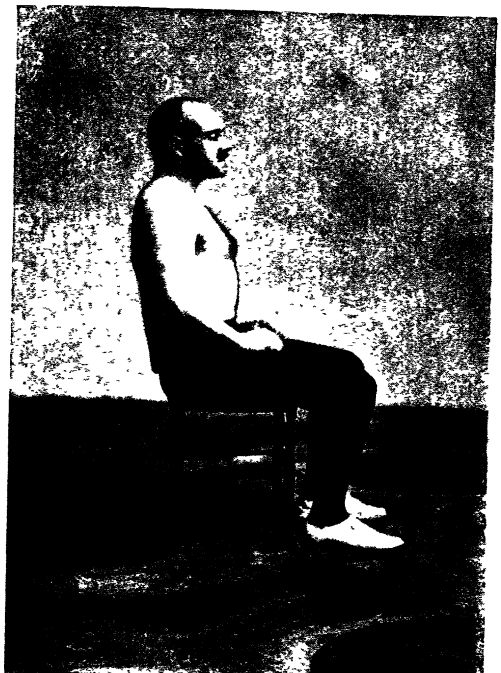
Our conception of physical beauty is the result of Greek influence. In all that has come down to us through the ages from ancient Greece, we have not one solitary instance of a beautiful form fashioned on fatness. The modern tailor and modiste may tax their ingenuity to the breaking point, but the greatest of these cannot hide the protuberant belly or the ponderous buttocks which handicap fat people in their cumbrous waddle through life. It is true that "by taking thought a man cannot add a cubit to his stature," but it is equally true that by taking suitable exercise and obeying the elementary laws of hygiene a man (or woman) can subtract a good deal of material from his total weight. And in doing it he will add to his general well-being.

Fig. 5 depicts the effect of an undue development of fat in and about the abdomen, and is by strange perversion of taste usually considered the natural culmination of man's physical excellence. Falstaff and Bluff King Hal were better in legend than in one's own person. The happy medium between these and "the lean and slippered pantaloon" is the desideratum to strive after, and in most cases the attainment is not impossible.

To carry the undue load, the shoulders have to be thrown backwards, and the head carried somewhat stiffly and further back than normal, while the lumbar spine is hollowed. This adaptation to need is seen in exactly the same way in the pregnant woman. The position is somewhat similar to that of the soldier on parade, but with certain differences. In the soldier the heavy abdominal mass is absent, but the hollowing of the back exists; the shoulders are pulled directly backwards without any of the downward tendency observable in the man of weight, so that the chest may be thrust as far forward as possible, while the head is held stiffly in both. In the soldier the abdomen is held rigidly, owing to the pull of the abdominal muscles, as already explained, which are stretched by the elevated ribs, and its capacity is further diminished by the thrusting forward of the lumbar spine.

Hana

FIG. 10.—Incorrect sitting posture.



Hana

FIG. 11.—Correct sitting posture.

[*Facing p.* 25.

The alignment of the spinal column for the correct posture in standing is without undue curve of the lumbar portion. If the reader, standing up well but not too stiffly, will gently push in his abdomen with both hands, he will find that he has not *hollowed* his back, but simply straightened his spine to some extent. Whenever the abdomen is retracted, the lower part of the spine is *not* hollowed, but rather straightened. Five minutes' practical observation opposite a mirror will fully demonstrate this.

Precisely the same principles apply in regard to man's posture when seated. The correct sitting posture is to use the same living belt of muscle and prevent the sagging forward of the abdomen and its contents. The way to attain this result is *not* to sit in a stiff, awkward position with the chest thrust out, but rather to press the buttocks well against the lower part of the chair-back. This is a much more comfortable and easy position than is generally realised.

The greatest benefit results from correct posture when sitting at the meal table. Illustration No. 10 shows the wrong posture adopted by most men and women. Here the buttocks are some distance from the chair-back, and thus unsupported; the breast-bone is depressed; the abdomen protruding and relaxed; and often the knees are drawn up and the weight rests on the toes.

The mechanical phenomena occurring in the body in this wrong posture are as follows:—

Owing to the depression of the breast-bone and general relaxation of the chest walls, the diaphragm is lower; as a result the stomach and all the digestive organs become somewhat crowded, and perhaps slightly displaced downwards. Some interference with blood supply and bowel movement is almost inevitable, consequently the process of digestion is retarded, and by constant repetition becomes impaired.

The body and the mind work in unison, and what affects the body deleteriously naturally affects the mind in a simi-

lar way. The mental depression and irritability of temper seen in liver attacks illustrate this. On the other hand, when the correct posture is adopted, as in Fig. 11, and good digestion waits on good appetite, a man rises from the table refreshed in mind as well as in body.

As indicated above, correctness of posture and freedom from artificial restrictions are of even greater importance when the body is making effort, calling for increased respiratory action and tissue change; therefore the need of correct posture during walking—the most usual, with some the only, form of exercise habitual amongst us. I have shown how the soldier when on the march must discard the gait of the strutting pigeon, and walk after the manner in which Mother Nature first instructed him. The unbooted savage does not turn out his toes, as does civilised man; neither does he turn his toes inwards. It is not possible for the ordinary man or woman to walk as the savage does, because our feet have become distorted by boots, and our freedom of action is impaired by clothing and habit. But that there is great room for improvement goes without saying. This habit of correct posture should be maintained *even when walking quickly;* rapid movement does not negative correctness of technique. For instance—the man walking quickly to the station holding an umbrella or small case—what about his posture? In 9 cases out of 10 he is gripping his umbrella or case so hard that the muscles of his forearm are thrown into strong contraction, his chest held stiffly and his head poked forward. This combination produces tenseness and breathlessness at the end of the journey because of the effort expended; whereas, if he remembered to hold his body and his luggage loosely, he would get there by much less effort and in less time without the waste of nerve force which we cannot afford to lose.

CHAPTER VII

ENTEROPTOSIS AND THINNESS

In connection with these conditions, it may be well to point out that the state known to medical men as *enteroptosis* is not by any means present in all cases of thinness, nor is it confined to thin people alone.

Often enteroptosis is present without giving rise to any symptoms whatever, and we find such cases occurring amongst women who have borne several children, or who have suffered from repeated attacks of abdominal dropsy. These women are usually thin, with extremely lax abdominal walls through which the abdominal organs may easily be felt.

In those cases of enteroptosis where symptoms are present the picture is different. Here the sufferers are usually young women, but the sterner sex is not exempt. We frequently have a history of an acute illness with great loss of weight as the starting point. General spareness of body is the rule, accompanied by feebleness and mental depression. Interest in life is centred around the badly functioning digestive apparatus, the plaintive exploitation of backaches and headaches, querulous plaints after the unattainable, and the fostering of the noxious weeds of self-pity.

A definite physical type develops; we note the cadaverous body and limbs, slight or marked shoulder stoop, flattened chest and, in women, small lifeless-looking breasts. The skin is dry and loose with many blue veins showing under it, and if it be lightly scratched with the finger nail it quickly blushes in the track of the irritant. The profile of the trunk is characteristic—the line of the

chest is continued practically unbroken to the navel, and between that point and the top of the pubic bone it bulges forwards, giving rise to a little paunch, derisively termed "a bun." The feeble muscle tone allows the knees to become slightly flexed when the person is standing. This alters the position of the line of the centre of gravity and is a factor in the development of flat foot, to which the poor muscle tone also contributes in no small degree.

The hollow abdominal viscera are crowded like an angler's bag of worms into the lower part of the abdomen and the pelvis. Their functions are thereby impeded. The condition becomes worse owing to the wasting of the muscle walls of the intestines brought on by want of movement, and as a consequence constipation is obstinate. Gas accumulates and increases the discomfort. Professional musicians, artists, writers, and other intellectuals are the people who appear to provide the bulk of these cases.

When it occurs it gives rise to a well-marked group of symptoms, which eventually drives the sufferer to seek the aid of a medical man. Generally speaking, the treatment may be said to involve the adoption of some form of abdominal belt, since it is almost impossible to restore the stretched and displaced abdominal contents to their original position. The employment of suitable exercises helps to restore general muscle tone; thereby the abdominal regions receive much assistance. Many ordinary fashionable corsets, so often the refuge of women weak in body, do not help in the slightest degree, since by their splint-like effect the mischief is increased, as the muscles are more or less put out of use. The only way to keep muscle fit is to exercise it. Women who suffer from weakened abdominal muscles feel "all-gone" when they discard their corsets. A suitable abdominal belt is necessary to take up the work when the weak muscles fail from fatigue. It need hardly be said that each case has to be fitted individually. In such an apparatus the support should be distributed from before backwards, in such a manner that the sides of the abdomen are practically

free from any pressure, the groins and lower abdomen alone being supported. Thus, the muscular walls of the abdomen are given opportunity to develop and enabled to sustain the contained organs.

There are many thin people of both sexes who do not suffer from any muscular weakness, and whose general health appears excellent. Such people naturally do not require or seek assistance. Others again, who though neither the subjects of any wasting disease or any coarse physical defect, such as enteroptosis, are constantly below par. They may eat well—too well, perhaps—yet they never appear well nourished. This may in part be due to faulty assimilation of food, and in part to sedentary habits, hurried meals, and mental worry. A constitutional tendency to spareness of body is not to be overlooked.

Where digestive errors exist they should be corrected, and as a rule the response to treatment in this class of case is prompt. Suitable exercises improve the digestion by increasing the peristaltic action of the bowel. If it be borne in mind that the intestines are muscular tubes, and, further, that muscular tissue responds to the stimulus of massage or kneading, then the good effects of a sound abdominal wall are explained by its action in kneading and pressing the contained organs. As the intestinal muscles are thus wakened into activity, they ensure the propulsion of the bowel contents, and stagnation is prevented.

Food may be likened to fuel in a steam engine. If the furnace be packed with coal beyond its efficient working capacity the head of steam drops. In like manner unskilful stoking, or unsuitable food, brings about the same result. Too much food, food badly packed inside, or food of a deficient nutritive quality, produces loss of vigour and malnutrition.

A couple of decades ago a craze spread among young women for attenuated and emaciated physique, the faked heroines of Hollywood, the absurd caricatures of "fashion journals," and the boneless gestures of supercilious manniquins provided the ideal, and incidentally broke the heart of Fat, Fair and Forty.

During the Georgian period woman fixed the waistline of her garments just under her armpits and left all subjacent thereto in a state of mysterious freedom and restraint.

The Victorian fashion pushed the line down to where it properly belonged, but squeezed out everything within it: liver, spleen and stomach, with part of the large intestine, were thrust up under the ribs to the annoyance of the heart and lungs, and the other viscera were forced down into the pelvis. The object of this distortion appeared to be the demonstration of the absence of the vulgar organs of digestion, mention of which, or of their functions, was a sacred taboo.

The revolt of the Victorian woman ended in the establishment of the half-nude, pregnant kangaroo, spineless spectre that has now fallen into the limbo of forgotten follies and is being replaced by the muscular Amazon of the parade ground, and the brawny daughter of the anvil and the trolley-bus, which has much of good.

The line drawing facing p. 29 illustrates the conditions fairly accurately. The virgins who expected their lamps to burn without oil were not the only examples of female folly.

Incidentally, and at the same time of first importance, is the fact that slimming interferes, in varying degrees, with the fulfilment of woman's greatest function. Motherhood became for many a pathological, rather than a physiological, phenomenon, and the child conceived in a starved body was handicapped before birth and afterwards.

It is fortunate that this silly striving after an invertebrate ideal did not become generalised. The school-girl hygiene of modern times leading to increased growth is generally observable in the girls who are bigger than their mothers before their school-days are over. Their good and athletic development bears testimony against the ill effects of the restricted, ladylike systems of suppression that condemned their mothers to genteel immobility.

Hysteria, the safety valve of suppression, has become

contemptible rather than provocative of solicitude ; brain and brawn have become competitive ; and bowels act without the intervention of dynamite.

Associated with enteroptosis and constipation we frequently have the condition known as colitis. By colitis may be meant any inflammation of the large intestine, but as the term is usually understood the disease known as mucous colitis is indicated. Its interest for us is that it is very closely associated with constipation, that there is apparently no definite disease of the colon, and that drugs afford no relief. Thus, hypochondriac and melancholy neurasthenics, whose muddy complexions betray the constant absorption of intestinal toxins, brood over their real and fancied woes, or vary their interests in life between attacks of diarrhœa and mucous stools and bouts of constipation. At best they get interludes of questionable well-being, punctuated by periods of misery. Every emotional disturbance, trivial worry, or error of diet may be followed by "an attack." Women between twenty and forty years of age are the chief sufferers, colitis occurring five times as often in them as in men, and being frequently complicated by disease of the generative organs. Such patients run the whole gamut of medical treatment, pass through the hands of many physicians, are good customers to the chemist, and are the despair of their relatives, as they neither get well nor die. Some gain relief at spas, such as Plombières and Harrogate, but the relief is transient as a rule. Now if we remember that constipation is nearly always present in these people, and that enteroptosis occurs frequently, we may look with some confidence to the probability of being able to effect an improvement if we can remove the constipation and better the general neuro-muscular tone. The measures advocated in this book for dealing with those conditions afford the rational means of approaching the subject of colitis, and if we can get rid of the self-engendered intestinal chemicals that poison the individual the probabilities are that we shall also get rid of the colitis.

CHAPTER VIII

LUNG CULTURE

THE lungs practically fill the thorax or chest, overlapping and enclosing between them the heart and the great blood-vessels proceeding from and terminating in that organ. Their function is to oxygenate the blood, and to permit the escape from it of certain impurities. The chief of these is carbonic acid gas. A considerable quantity of water is also got rid of in the respiratory process. This is easily demonstrated by the well-known effect of dimming a mirror by breathing upon it, the dimming being due to condensation of the moisture of the breath on its cool surface.

Certain other elements are also present in expired air —organic substances of more or less poisonous character, germs of disease either from the lungs themselves or the air-passages leading from them, and frequently the volatile elements of some articles of food. The odour of alcohol from the breath is a well-known instance; so, too, the smell of garlic or onions. These odours come primarily from the lungs—not from the mouth.

We are not here concerned with the anatomical structure of the lungs; hence it will suffice to say that they may be regarded as two elastic spongy organs filling the thorax, and ever varying in size with rhythmic regularity during life. As we require pure food and frequent evacuation of waste from our intestinal apparatus, so also we require pure air and healthy function for our lungs. But while in the matter of food we are apt to be greedy, in the matter of fresh air we are prone to be stingy. The lungs, more long-suffering than the much

offended stomach, continue to make bricks without straw, and unobtrusively carry on their work, sorting out the best from what is often a very bad mixture.

During rest the respiratory process is imperceptible, but the increased depth and frequency of the breathing act during periods of exertion, or in certain diseases, bring home to us the fact that the whole process is subject to variation, and we can use this knowledge to our advantage if we care to take the trouble. Here, then, it may be broadly stated that to get the best out of our lungs we must put the best into them. Fresh air in unlimited quantity is this best—not always available, unfortunately, but often to be had when it is stupidly shut out, the terror of an imagined draught leaving no place for fear of the actual ill effects of an inadequate supply of fresh air.

As the process of respiration is an unconscious act, carried on by the voluntary muscles—that is, muscles more or less under our will control—it follows that the more we develop our muscles generally, the better fitted are they for carrying on the respiratory function. A chest clothed in well-developed muscle is capable of a wider range of movement than one not so well equipped. The muscular partition between the chest and the abdomen is called the diaphragm, and in all exercises tending to develop abdominal movements this partition is an active participator. Hence it follows that development of the abdominal muscles is also direct development of the respiratory muscles. So that it may be truly said that the more attention we pay to the hygiene of the belly, the more the chest (and incidentally all the other parts) benefits.

The question, "Why do athletes and robust people die of pneumonia?" is so frequently asked that a few sentences may be devoted to it here. Pneumonia is an acute infectious disease, respecting neither age, rank, nor sex. It is the result of infection of the lung tissues by the germ called the pneumococcus. It is serious because the air-cells in the lung become filled with an

inflammatory secretion which prevents the air from entering. If enough lung escapes to carry on the work, the patient gets better, but if the disease is too extensive, the man may die. As we are all exposed to infection with pneumonia, and as it is probably the exception to find an individual who is not nursing some of the germs in his air-passages, the wonder is not that a few succumb, but that any escape. Anything that lowers our resistance, such as fatigue, cold, or hunger, increases the risk of infection. The athlete is often fatigued by the effort he puts forth, often over-heated at its conclusion, and often disregards the dictates of experience in the matter of taking precautions against chill.

Similarly, anything that raises our resistance, such as well-developed lungs and clean bowels, necessarily decreases the risk of infection. In these two respects the young athlete is very often tried in the balance and found wanting. The middle-aged constipated obese ex-athlete is necessarily still more susceptible to this dangerous infection.

In his "Respiratory Exercises," Dr. Harry Campbell refers to the value of lung culture as a preventive of pulmonary disease. He says:

"The more perfectly developed the lungs, and the more mobile the thoracic cage, the less is the tendency to such diseases as phthisis, bronchitis and pneumonia. This is a well-recognised fact. Nothing is more certain, for instance, than that small, ill-developed lungs are prone to tuberculosis . . . Not only do good pulmonary development and free thoracic mobility tend to prevent lung disease, but they place the individual at an advantage should he happen to develop it, both on account of the high resisting power belonging to the well-grown lungs, and on account of the large margin of reserve that goes with them. It is because of the smallness of this reserve in those with ill-developed lungs that they are so liable to succumb when attacked by acute pulmonary disease, and it is very largely for this same reason that the danger from it increases with every year after middle life, the reserve diminishing as emphysema and thoracic rigidity advance."

CHAPTER IX

DAYTIME DROWSINESS

SLEEP is common to all animated nature; sleepiness may be considered a purely human characteristic. The winter sleep of hibernating animals does not come under the stigma of sleepiness. Their periods of sleep are just adapted to their physiological and climatic needs, and when awake they are wide awake, appearances notwithstanding. During sleep all the chemical and vital processes are slowed down, and some are obliterated. It is during sleep that the mechanics overhaul the machinery of the body, removing worn and used-up parts, oiling and greasing others, and generally "tuning up" the engine for its next run.

In health, sleep ought to be followed by alert wakefulness. The time-interval between the two states varies, of course; it is in some measure an indication of the thought-speed of the individual, but perhaps is more a result of habit—a habit fostered by the disinclination to get up. Also the loss, for many generations, of any necessity to awake suddenly into defensive activity at the approach of some danger has "bred out" the ability to awake the mind with the eyelid; but much may be done by a very little training. The drowsing, yawning, grumpy salutation to the morn ought to be met with a brick, or a fire-hose!

Last night's potations, yesterday's heavy meals, and the heavy meals of many yesterdays have impeded the pathways of nerve-impulse and blocked the ducts of thought. A slow process of mental joint-bending has to be gone through before the thinking machine gets running properly.

Sleepiness in the morning, however, may be a more or less harmless inconvenience. The seemingly unconquerable drowsiness during working hours of the constipated man is worse than inconvenient: it is frequently disastrous in commercial and public life.

We all recognise, in a general way, the benefits of reducing superfluous flesh and relieving constipation; but few of us realise that one of the most important benefits resulting from this is *the cure of daytime drowsiness.*

I recently had a patient sent to me for treatment. His weight was over 17 stone; his height, 5 feet 10½ inches; and his waist measurement was 49 inches. He was a man with a good brain, powerful frame, and good natural development; but for years he had neglected his body, and had gradually piled on flesh. In ten years he had put on between 50 and 60 lbs. in weight. He was still a "young middle-aged man." He was engaged in office work, over long hours; kept a motor car; hardly walked at all, and ate three heavy meals a day all the year round. It became increasingly difficult for him to give the necessary attention to his business, owing to the almost overpowering drowsiness that overtook him every afternoon, and he was seriously considering the possibility of having to resign his chairmanship of directors, as he found himself unable to keep awake on occasions demanding all his mental faculties. He was afraid of himself, afraid of being found "asleep on duty."

He consulted his medical adviser, who first of all reduced his diet—put him on a fruit and whole-meal breakfast, light salad-and-cheese luncheon; and one substantial meal in the evening—cutting out butcher's meat, but allowing fish, game or poultry. His constipation was suitably treated; he was advised to ventilate his office more efficiently, and walk in the fresh air as much as possible instead of driving everywhere in his car. His further treatment rested with myself. At first I gave him deep massage and abdominal manipulation daily for a fortnight, and exercise limited to about five minutes

a day, as the condition of his heart was not good. At the end of the fortnight he came to me every other day, and gradually the massage was decreased and the exercise increased. Particular directions were given in regard to habitual posture, and the occasional retraction of the belly wall when sitting, standing, or walking. At the end of a month he came twice a week, and afterwards once a week, doing his exercises every morning. In two months this patient had lost 26 lbs. weight, and reduced his girth by 5¼ inches; his constipation was a thing of the past; his enjoyment in walking steadily increased, and soon he was able to resume golf.

But the greatest improvement was in his mental condition. Instead of entering his office in a half-nervy, half-grumpy condition, he felt bright and cheery and ready for the day's work. Notices of directors' meetings were no longer a nightmare. His daytime drowsiness had vanished, he was always mentally alert, and business difficulties which formerly harassed and annoyed him were seen in their proper perspective. He slept well at night, and awoke every morning refreshed in brain and body.

Note.—Another important point that should be mentioned is that the heavy City luncheon is often largely responsible for the afternoon sleepiness. All animals (and man is no exception) tend to become drowsy after a heavy meal. Meals taken during working hours should therefore be extremely light. This applies even more to the brain worker than to the manual worker.

CHAPTER X

FLAT FEET

The normal healthy foot! How many people have ever noticed that a footprint on the hard sand, or the imprint of a wet foot on the floor, shows not the outline of the whole sole, but instead a disjointed pattern, produced by the heel, the outer line of the sole, the points where the ball of foot rested, and the rounded dabs left by the ends of the toes?

This appearance is due to the arched shape of the foot, one large arch extending from the ball of the foot to the heel, and a short one extending across the front, behind the base of the toes. This arched arrangement is maintained by powerful ligamentous structures in the sole of the foot, and when from any cause they lose their function, becoming over-stretched, the arches are said to "drop." The foot then rests on the ground for its whole length. The results of this are that the gait becomes shuffling, the spring being lost. Pain and fatigue accompany the distortion as the bones of the foot are pressed on the ground, and in addition to limitation of function, grace of movement is destroyed, while headache, backache, and general weariness help to complete the misery of the subject. Persons who become fat and too heavy for their plantar arches become flat-footed. Others again who, through ill-health, lose tone of tissue, or those whose avocations in life entail much standing, such as policemen, nurses, shop assistants, waiters, etc., are all subject to the condition. How widespread is the evil is manifested by the large number of advertisements one sees daily extolling the different "supports." In his book, "Exercise in

Education and Medicine," p. 240, Dr. R. Tait McKenzie says: "In an examination of a thousand supposedly normal students I have found it (flat-foot) in two hundred and seventeen cases."

Once the condition of flat-foot becomes established, cure in the sense of restoration of the pristine state is out of the question. But much may be done to improve the sufferer's disability by suitable exercises, and in cases where the body-weight is excessive this may be considerably reduced with marked benefit. Dancing and walking on tip-toe will materially help to improve the muscle tone and have a marked effect on the feet. At times it may be necessary to practise a complete system of suitable foot exercises,* combined with massage, for a long period before betterment is achieved; and it is seldom that a case occurs which proves wholly unamenable to treatment. All cases of flat-foot require suitable shoes.

The best form of shoe is one which allows a certain amount of freedom to the toes, while giving the necessary support. The inner line of the sole from toe to heel should be in a straight line, the inner side of the sole and heel should be a little thicker than the outer, and the "waist" of the shoe should fit well and be fairly stiff. It is not much use having well-fitting shoes and badly fitting socks. Socks that are too short cramp the feet and cause fatigue to the wearer.

* In *Restoration Exercises for Women*, by Mrs. Ettie A. Hornibrook (Ettie Rout), [Heineman, 6*s*.], a system of exercises for flat feet is given. A new edition of this book is now being prepared for publication in 1947.

CHAPTER XI

EXERCISE AFTER OPERATION

In those who have recently undergone an *abdominal* operation there is a natural tendency to walk with care, avoiding anything in the nature of free striding. This somewhat stiff and timid gait is the subconscious effort to prevent strain or jar, and, if persisted in, as it is apt to be in persons of advancing years, becomes habitual, and may conduce through the faulty gait and loss of muscle tone to the development of some degree of flat-foot. The remedy is to strengthen the abdominal walls, and thereby get rid of the feeling of insecurity present in these cases. By this means the tenderness that occasionally lingers about the wound gradually disappears and confidence is ultimately restored.

In massage we have a powerful aid for the restoring of muscle tissue which has suffered through disuse, and its early and judicious employment after operations is now a recognised measure all over the civilised world. The application of massage should be no haphazard rubbing; to obtain its full benefits it must be carried out by a skilled operator who combines suitable passive and, at times, graduated active movements with the rubbing, kneading and other manipulative processes grouped under the general term "massage."

After pregnancy, again, we see a state of muscle flabbiness, especially in the stretched abdominal muscles. Until recently the only means adopted to "restore the figure" was the application of a tight abdominal binder. It certainly gives the patient a feeling of comfort by the support afforded, but, so far as helping to restore the

muscles to their normal state, the binder might as well have been tied round the bedstead. Much good follows the employment of massage, and early muscle movements, in these cases. If such routine became universal one would hear less often the complaint that the after-treatment had been careless, and that the patient's figure had not been restored to its normal dimensions. I urge every woman, unless there be some definite contra-indication, to have recourse to skilled massage, followed by suitable exercises, after the birth of her child, and I can promise her that the result will justify the means.

When the patient enters upon the "walking about stage" after abdominal operations, such as those for appendicitis, gastro-enterostomy, etc., exercises are usually indicated, unless for some special reason the surgeon deems them inexpedient. Gentle exercises, properly supervised, will help materially to shorten the period of insecurity, and at the same time directly benefit the general condition of the convalescent. Recently, I had a case from a surgeon illustrating this. A young man, aged twenty-two, was operated on for appendicitis. Less than a week afterwards the surgeon ordered massage of legs, arms and back; naturally the abdomen was not touched. A week later I began with gentle breathing and control exercises. At the end of a month the patient was walking well, was playing a little golf, and was acquiring good control over his abdominal muscles. At the end of a further three weeks the patient was able to play golf properly, and had a very fair amount of abdominal muscular development and power.

The safety of these exercises, for such cases, lies in the fact that all sudden effort or jerk (such as is made even in familiar exercises like swimming, *e.g.*) is avoided. Naturally, in the beginning, the patient acted with hesitation and caution, and thus he himself ensured against over-exertion. The rapid improvement that followed in the toning up of the recti muscles enabled him to adopt the correct posture in standing and sitting. He ceased to feel

the usual drag and soreness on attempting to straighten the spine, or on contracting the belly; he walked with ease, and exercised in comfort. The mental element in this case helped in no small degree to hasten his convalescence.

CHAPTER XII

GOLF AS EXERCISE

To approach golf in any but a spirit of enthusiasm is to confess oneself heretic or madman. Its place is more assured than the philosophy of Confucius. Therefore I hasten to make public avowal of my orthodoxy. It calls the man from the city, the maid from the mill, it lures the matron from the cares of her nursery and the bookworm from his arm-chair. The politician and the parson meet the soldier and the son of Neptune on the shorn green; and all derive some measure of good, some touch of pleasure, some breath of freedom on the windy downs. But—and there is always a "but" in things!—golf is not quite sinless. The man who plays strenuous golf once or twice a week while the remainder of the time is spent in close application to business does not well. While youth is with him, impunity holds his hand, and as the years drag behind, and as the abdomen drops before, he is asking his heart to do more work than Nature meant it for. No doubt he grows hungry in the fresh air, and the desire is frequently not limited to solid nourishment alone, but inclines to alcohol. Carrying a somewhat weighty abdomen around the countryside one or two days a week will not help in any way to improve his condition or lessen his burden. That general exercise does *not* reduce weight to any extent is a fact well known to physicians. Speaking of particular exercises, such as fencing, Dr. Harry Campbell, in his admirable book, "Respiratory Exercises" (1898), says:—

"It may be observed in passing that all muscle exercises do not cause fat to disappear at the same rate all over the

body. The fat tends to be absorbed chiefly in the neighbourhood of the muscles most actively employed. Thus, if a stout man takes to fencing, the loss of fat takes place chiefly about the chest. And similarly rope-hauling, which calls the abdominal muscles into active play, is especially calculated to remove fat from the belly."

These sentences, with golf as a text, might be written with equal verity. Let the golfer of middle age, whose waist-line is not what it was in the years gone by, take up a system of abdominal control exercises, and put the principles I advocate into practice; he will soon become a disciple of girth control, his diminishing waist measurement being the inverse measure of his increasing fitness, his improved bodily condition being reflected in his brighter mental outlook, while his capacity for work keeps pace with his inclination for play.

Here a word of warning may not be out of place. Frequently one reads of the sudden death of middle-aged men on the golf links. An eminent London doctor is quoted in the press as having expressed the opinion that fifty is the "danger age" for golfers. He pointed out that swinging is the most strenuous part of golf, and may be dangerous after the arteries have become rigid.

Men are loth to admit the onset of age, and are often blind to the sign-posts which border the pathway. The aphorism that "a man is as old as his arteries" is as widely known as it is universally disregarded. When we are suddenly faced with disaster as it overtakes men whose blood vessels give way, we are perhaps prone to call a momentary halt. But inclination fostering forgetfulness, we take up the running again, ignoring the possibility of ourselves being the individual who may provide the material for the next newspaper paragraph.

Golf, I repeat, is not so sinless as its votaries would claim; but on the other hand, it must not have laid at its door the consequences of disregarded dictates of common sense and ordinary prudence.

The indulgence in golf, as in all other forms of exercise,

ought to be gauged by the fitness of the player ; and how many seek a skilled medical opinion before taking up the pastime, or continuing in it after they have arrived at the "danger age" ?

A propos of this a recent case comes to mind where a man of fifty-six fell dead during a game of golf. At the inquest it was stated that the deceased a few years ago had been advised by his doctor to give up golf and tennis, but that recently he had taken up golf again. The autopsy showed that death was due to a fatty heart, probably accentuated by a distended stomach.

As pointed out elsewhere, the adoption of the correct posture very soon becomes quite unconscious, on the golf links as elsewhere. No mental effort is required, the attention is not diverted from the game itself ; rather the player finds himself not only able to play a more enjoyable game, but a much better game, and with far less fatigue.

CHAPTER XIII

ABDOMINAL CONTROL

ONE of the greatest helps in obtaining and maintaining abdominal control is the occasional voluntary retraction of the belly during the day. This movement can be done in any place and at any time, and in any posture. The movement consists in retracting the abdominal wall *without expanding the chest.* The average person, suddenly and infrequently remembering he is standing badly, tries to counteract this by standing up stiffly, forcing the chest out and drawing the belly in ; in other words, adopting some amount of the stiff military posture. The retraction of the abdomen can and ought to be done solely by the abdominal muscles, not in any way as a breathing exercise or a chest movement.

When the belly is retracted in the military manner, as already described, this is what happens. The ribs are raised by contraction of the intercostal muscles, namely, the muscles between the ribs, and by the pull of the head and neck muscles, which lift the chest as a whole ; the muscles pulling back the shoulder blades are thrown into action, as are also the pectoral or front chest muscles ; and thus all the muscles of the thorax are used as a fixing agency for the muscles of the abdomen, *which should be contracted without their aid at all.* A simple parallel is found in the muscles of the leg. To harden the muscles of the calf it is not necessary to contract the muscles of the thigh as well. The contraction of the calf muscles can be done independently. Similarly, the retraction of the belly should be a belly movement only.

This retraction movement does more than merely cause a group of muscles to function. It serves as a

reminder of the need for correct posture. It has a great effect on the blood supply of the abdominal organs. Its pump-like action relieves the tendency to stagnation of the blood stream which frequently occurs there. By its stimulating effect on the bowels it improves their tone and thus helps to counteract any tendency to constipation which may exist. Last, and perhaps not least, it directly conduces to the removal of abdominal fat, for it is an established truth that frequent use of the muscles in any area causes absorption of fat in that region.

This voluntary contraction can be practised quietly without in any way attracting attention. It need not be done so often that it becomes tiresome—just any odd times during the day in disengaged moments ; for remember, it can be carried out invisibly, and (as I said before) in any position.

Lying along the whole length of the spinal column, on its frontal aspect, is a curious complicated system of nervous structures called " the sympathetic system." It consists of bundles of nerves, which in places appear to unite and swell into little lumps like knots in string. One of these groups of knots is placed on the first lumbar vertebra and behind the stomach. It is known as " the solar plexus." Its interest for us lies in the fact that a blow received on the abdominal wall over this region may have grave or even fatal consequences for a person whose muscular development is feeble. This effect is well known to pugilists. The result of a blow delivered over this area is a general collapse, varying in degree on the measure of violence and the muscular development and preparedness of the person struck. This sympathetic nervous apparatus is intimately associated with the function of the abdominal organs, and is sometimes spoken of as " the abdominal brain." That a good muscular tone will not only protect it from injury, but may also conduce to a better discharge of its functions, is highly probable ; hence the importance of securing and maintaining this condition.

CHAPTER XIV

BUTTOCK CONTRACTION

THE bony pelvis as a whole differs in the sexes—in the male it is narrower, deeper, heavier, more strongly marked for muscular attachment, and has a narrower pubic angle than in the female. It is also placed at a different angle, so that it does not protrude so much behind. These differences are due in part to the reproductive functions of the female, and in part to the fact that the female skeleton is smaller and lighter than the male.

The more prominent buttocks of woman are caused (1) by the scaffold of bone to which the muscles (glutei) are attached, (2) by the angle of the pelvis giving a more definite hollowing of the lower (lumbar) spine, and (3) by the fat deposit—a sex difference as much as the breasts are a sex difference ; for in the latter case the amount of gland tissue in the breast is small compared with the amount of fat in which it is embedded.

The small waist and the knock-kneed tendency of the female accentuate the difference in the sexes.

From what has gone before in this book it will have been noted that muscle exercise has as a corollary the absorption of fat in its neighbourhood. The gluteal muscles, which comprise the active buttock, are coarse fibred and massive, their function being to maintain the body on the thighs, and very largely to swing as well as support the limbs. Sedentary occupations leave them out of training, and favour the deposition of fat around them. No amount of exercise undertaken by normal individuals will give them the physical peculiarities of the opposite sex ; thus a lazy, flabby man, be he ever so Falstaffian,

will never present the "full-bottomed" appearance of the lady of quality, or the sweating peasant in the harvest field; nor will the most active gymnast ever induce her protuberant posterior to fly away during her flights on the trapeze. Where the excess of fat is combined with the flabby muscle much may be done to reduce the dimensions of that which is often a great tribulation to the unwilling owner. The exercises described in Part II. of this book, particularly exercises II. and V., are eminently suitable in these cases.

It should be remembered that when all the abdominal muscles are thrown into action the gluteal muscles wake up too, and if the initial impulse be directed to the glutei it will be found that the abdominal muscles, especially those of the middle and lower regions, act more vigorously —a most desirable result, since in the lower abdomen only do we get the effect of muscle contraction on the internal organs.

When, therefore, the importance of occasional voluntary retraction of the abdominal wall is being considered, it should be understood that one of the chief methods I am recommending for their retraction is the combined contraction of the buttocks and abdominal muscles.

This can be effected in the recumbent posture as readily and efficaciously as when standing. If the reader squeezes the buttocks together, that is to say, contracts his gluteal muscles, he will find that the abdominal muscles follow suit; and at the same time he will perceive that the front of his pelvis is tilted upwards, the amount of tilt depending upon the intensity of the muscular act.

CHAPTER XV

FAULTS OF THE USUAL SYSTEMS OF EXERCISE

THE following are the chief defects in the usual systems of physical training :—

1. The time occupied per day is usually too long for the average man to devote to what he is apt to consider an uninteresting task.

2. The systems involve a very large number of movements, many of which affect only the arms and legs.

3. Those affecting the internal abdominal organs are always done with the abdominal walls rigid, which has the effect of squeezing and fixing the internal organs, thus preventing the free action of the involuntary muscles of the intestines.

4. A few minutes' exercise per day *is not sufficient to counteract wrong posture habitually adopted.*

5. Practically in all standing movements the stiff military position is adopted.

6. The muscles of the waist-line are largely neglected, while those of the limbs are subjected to relatively excessive action.

7. In breathing exercises, instead of standing with the ribs mobile and expanding the chest as the lungs are filled, the chest is forced forwards and *afterwards* the lungs are filled. This method causes chest rigidity (a spirometer reading will show that the vital capacity is less when this procedure is adopted than in the former case).

8. Too often the cultivation of muscle for the mere sake of muscle is the be-all and end-all of the training.

9. Failure of recognition of the particular object to be attained, viz., the churning up of the abdominal contents.

CHAPTER XVI

EATING AND EVACUATION

DOCTORS agree that most people eat too much and too often; and that they do not understand the elementary principles of sound dietary. Again, on the subject of constipation there is a unanimity of opinion quite unusual amongst them, if we judge by the saying, "Doctors differ." Our civilisation lies at the bottom of many ills, and is probably almost wholly responsible for this perverted function of the bowels.

In paraffin, taken in tablespoonful doses half an hour to three-quarters of an hour *before* a meal, we have a useful ally in the conflict with constipation. Paraffin acts solely as a lubricant, not being absorbed or acted upon by the intestinal juices. As long as we keep in mind that paraffin is an accessory, while making the muscular apparatus the main mechanism, its utility in certain cases is unquestionable. It ought not to take the place of the natural means inherent in the body.

Efficient mastication of food is extremely important and widely neglected. The process of digestion starts in the mouth and there are no teeth in the stomach; therefore we should realize that if we bolt in haste, we shall belch at leisure. Not the amount we eat, but rather what we digest, is that which nourishes us. A moderate meal well chewed will give us more working energy than a heavy meal hastily swallowed. For most people two meals a day are ample; whether the meal missed be breakfast or luncheon is a matter for each individual to decide. Most business men who have tried the system find it better to omit luncheon; but this depends upon the kind of breakfast, and perhaps the hour at which that

meal was taken. A light luncheon, taken as much for the break in work as for the food, helps to keep the human machine running efficiently. Business men often find in this way that they have a greater capacity for work in the afternoon and a much better appetite for dinner.

The more frequent internal use of water is to be recommended. Taken before breakfast and between meals, in liberal quantities, hot or cold, it is extremely beneficial.

Appetite and taste may be allowed for in the individual's diet, but proper habits of eating should be cultivated. Most sedentary workers consume too much food, especially sugars and starches or alcohols; hence put on fat. Excessive weight can be reduced by exercise, but no system of exercise should be considered as giving a mandate for over-consumption of fat-forming foods. If alcohol is taken at all it should not be taken till the evening, and then only in moderation.

And health depends on the proper correlation of all the factors.

The cumulative effects of worry must also be considered, in so far as they tend to derange digestion. Generally speaking, the results of constant worry may be seen in liver derangement, sluggish bowel action, with much flatulence, nervous irritability, sleeplessness, and increased blood pressure. For men over forty this is almost axiomatic. Women suffer from worry effects more in other ways, but increased blood pressure is not unknown among them. These serious consequences are of slow development, but it must be borne in mind that there are also immediate effects at the time of ingestion of food.

Thus, a man who swallows his meal while in a state of mental pre-occupation, or while experiencing the emotions of anger or excitement, is not in a condition to deal satisfactorily with the food which he puts into his stomach. It is well known that people taking their meals under these conditions suffer from acute indigestion. A mind at rest is as essential for the digestive process as a stomach

in activity. For the due performance of its functions it is necessary that the stomach be supplied with an additional quantity of blood. While the mind is actively engaged, or the emotions aroused, the brain makes a call upon the circulation, with the consequence that the stomach suffers loss of blood when most requiring it. The habitual repetition of this state of affairs produces a chronic impairment of the digestion.

In conclusion, some people may say that all this is too much trouble, and that they have not time to consider their health. Such people do not think it too much trouble to carry round a distended and overloaded gut. People who say they have not time to masticate their food properly and do a few minutes' regular exercise daily usually find time to get constipation. As a rule, the time they *waste* in the lavatory is more than sufficient to do the necessary chewing to stir up the sluggish contents of their abdomen by the practice of the system of exercise outlined in this book.

For the neglect of our bodies, for over-indulgence, for laziness, we have all to pay the price one way or another, and that price is usually a heavy one. On the other hand, for a small expenditure of time and trouble we gain efficiency of body, alertness of mind, and a general feeling of well-being.

CHAPTER XVII

SANITARY CONVENIENCES

MAN'S natural attitude during defæcation is a squatting one, such as may be observed amongst fieldworkers or natives. Fashion, in the guise of the ordinary water-closet, forbids the emptying of the lower bowel in the way Nature intended. Now in this act of defæcation great strains are imposed on all the internal organs. The unhappy wight who has to concentrate all his energy on the expulsion of a hard fæcal motion shows the strain by bloodshot eyes, by the vessels that stand out on his forehead, by his purple face, wearing the anxious expression indicative of a combination of malediction and prayer.

The object of this chapter is to try to lessen the number of those who have to go through the unseemly performance.

The modern w.c. seat has been designed to provide comfort for the unfortunate user, since such a scene as that depicted above takes time, but there consideration for the welfare of the user ends. So far from helping him in the performance of his labour—for, indeed, it is a labour of no easy kind—it were better that the contraption had killed its inventor before he launched it under humanity's buttocks.

The weakest part of the abdominal wall is that part just above each groin—the part where ruptures usually occur. In the natural squatting position the upper front aspects of the thighs are pressed against and give splendid support to these weak places, thereby tending to prevent the occurrence of rupture. In the modern w.c. the body is at a right angle with the thighs and the belly unsupported by them.

In the native the discharge is soft, pultaceous, and easily passed out of the bowel; in civilised man, the motion is "formed," often almost as hard as old putty, and very dry. It does not require a sermon to demonstrate where the handicap lies; but it evidently requires more than any sermon can convey to convince the public that it

regularly does its best to rupture itself. The genius of a Herschel or a Watt is not required to design a water-closet arrangement consonant with common sense; but it will take a steam hammer to break up the prejudices of ignorance and fashion. It is no overstatement to say that the adoption of the squatting attitude would in itself help in no small measure to remedy the greatest physical vice of the white race, the constipation that has become a contentment.

In his book, "Middle Age and Old Age," Dr. Leonard Williams, in criticising the defects of the modern water-closet, says (page 65):

"The modern water-closet, for all its sanitary perfection *vis-à-vis* the community, is grossly defective *vis-à-vis* the individual, because it deprives him of the mental stimulus of the uplifting vision afforded by the result of his peristaltic labours. Nor is this its only crime. That its fathomless depths should deprive man of the satisfaction of ocular appreciation is bad, but it is almost worse that its height from the ground should paralyse his abdominal muscles. These muscles are little enough exercised by sedentary man, but when seated on the ordinary everyday water-closet he could not exercise them even if he would."

This state of things can be obviated by the installation of the floor-level receptacle, but where this is impossible, or undesirable, much can be done by providing a strong wooden stool about 10 inches high, upon which the feet should rest during the act of defæcation. This will lift up the knees and bring the front aspect of the thighs into contact with the abdomen, as occurs in the natural squatting position, only the support afforded to the belly wall is not quite so complete.

There is no earthly reason why the natural squatting attitude should not be generally adopted, and there is every reason, hygienic, æsthetic and economic, why it should be made compulsory in all public lavatories, schools, institutions, barracks, and other places where many persons have recourse to the same cabinet. The physician and the anatomist are agreed on the one side; the architect, the manufacturer and fixed prejudice are in accord

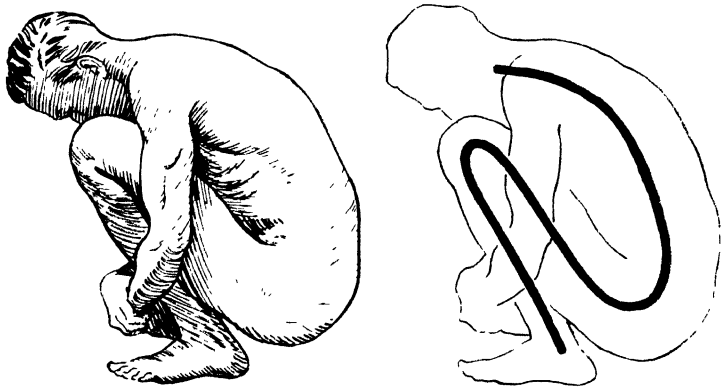


FIG. 19.—Attitude adopted by native man, showing abdominal wall supported by the flexed thighs

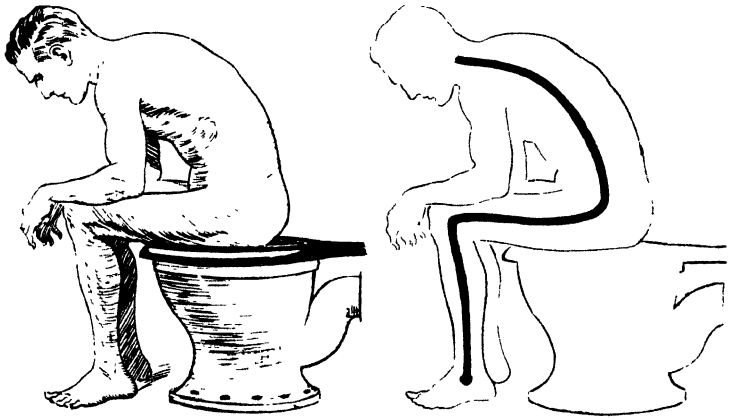


FIG. 20.—Usual position adopted at stool by civilised man, showing unsupported abdominal wall.

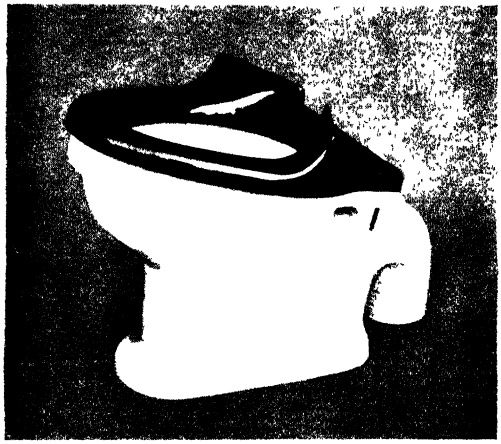


FIG. 21.—Health Closet.

Patented.

FIG. 21A.—Hygienic Stool.

on the other ; and between the two man ruptures himself. It is possible to install a water-closet which permits of the squatting attitude being adopted.

A doctor writing in *The British Medical Journal* says : " Everyone who does not adopt the squatting position in defæcation is suffering from partial constipation. Our waste-paper baskets are daily filled with the literature on how to cure constipation and avoid its sequelæ.

" John Chiene, late Professor of Surgery in the University of Edinburgh, and known to thousands of Edinburgh men, gave us a very interesting lecture on his return from the South African campaign, on the squatting position. He described how, by carefully weighing his fæces as passed in this position on the veld, and as passed in the ordinary pedestal water closet, he found that in ordinary civilian life, the rectum was never sufficiently evacuated.

" I feel convinced that if practitioners would adopt the squatting position and ascertain the benefits for themselves, and then instruct their patients accordingly, there would very possibly be much less appendicitis and other pelvic and abdominal troubles and a better level of general health."

Some manufacturers have put upon the market an appliance known as the " health closet," which does not permit the user to squat, but does allow him to adopt a forward, stooping attitude, which embodies most of the desiderata. This closet has a low seat, higher in front than at the back, where it is provided with an elevation which prevents the occupant from slipping backwards. However, for those people who do not want to install a special closet, there is also on the market a very good substitute found in the Posture-Hygienic Stool which gives to the user the full benefits of the true squatting position and is used in conjunction with the existing pedestal closet without the necessity of any fixing or fitting. The Posture-Hygienic Stool, illustrated in Fig. 21A, may be obtained either direct from the National Society of Domestic Hygiene, Aldwych House, London, W.C.2, or from Harrod's Ltd., Knightsbridge, London, S.W.1.

PART TWO

CHAPTER I

RULES OF EXERCISE

It is not possible to formulate any arbitrary set of rules applicable to every case alike. It is obvious that each individual must be guided by such conditions as environment, occupation, age, sex, muscular development, general health, and any peculiar personal factors which may exist. Some general principles are common to all, such as the following :—

1. Exercise should not be taken for some time (say two hours) after a meal, as the stomach then demands a greater share of blood, and if by voluntary effort this is deflected to the muscles the digestion suffers.
2. Exercise before having your bath. Whether the bath is hot or cold depends on the individual. Cold baths are unsuitable for many people. The hot bath followed by the cold shower, or cold affusion is a powerful tonic stimulant suitable for healthy persons.
3. The clothing worn during exercise should be warm and loose. For men—sweater, pants, and slippers ; for women—golf jersey, bloomers, shoes and stockings (no corsets),
4. Fresh air, always a necessity, is doubly necessary during exercise. Keep the windows open but avoid draughts.
5. If possible, exercise in front of a mirror—in summertime exercise stripped to the waist, in order to

observe the muscular action controlling the abdominal walls.

6. Persons suffering from obstinate constipation should exercise twice a day for first six weeks ; after that once a day may be sufficient.
7. Do not exercise when fatigued. Take a short rest, and then exercise.

N.B.—Don't hold the breath when exercising. Breathe in and out quietly and deeply.

The best time for exercise is immediately on rising. But if this is not convenient, exercise at bed-time.

Regular Weighing.—A small portable weighing scales should be in the bathroom of every well-ordered house. These can be obtained nowadays for a few pounds. If once a week the weight is taken correctly, immediately after the morning bath, and noted down, errors in diet or laxity in exercise, leading to putting on of superfluous fat, or undesirable loss of weight, can be rectified.

CHAPTER II

SYSTEM OF EXERCISE

I. Hammock Swing

Place a folded blanket on floor. Lie flat on back on the blanket. Bend both knees, soles of feet on the floor; feet about 12 in. apart, and heels close to buttocks. It is advisable for a stout person and for elderly people to put a thick pillow under head (*not under shoulders*) to prevent rush of blood to head. Place both hands *flat on floor*. Now raise the hips from floor about 2 in. The body-weight will then rest on the head, shoulders and feet. Vigorously swing the hips from side to side, *keeping the shoulder-blades flat on the floor*, so as to tilt each hip upwards alternately.

Repeat 20 times—10 each side. Lower hips to floor. Rest for five seconds.

This constitutes one complete cycle.

Raise again, and continue six cycles of 20 beats each; that is, 120 swings with six rests.

This exercise from beginning to end will take about 1½ minutes in all. At first it is best to make each of the cycles consist of six beats, and gradually work up to 20 beats to each movement. With practice the beats will naturally be done more rapidly.

Don't hold the breath.

Rest between each cycle.

The great advantage of this exercise is that, the abdomen being held loosely, the movement has a very deep and rolling action on the intestines, thereby being of great utility in remedying constipation. There is practically no strain on the recti (straight front muscles of abdomen).

Therefore the movement can be practised by delicate persons without any fear of strain, and there is none of that soreness which so often follows the beginner's efforts; while, on the other hand, Exercise I. can be performed by athletes with sufficient vigour to make it a thorough and searching exercise.

If the reader forms the idea of swinging in a hammock with somebody checking the movement suddenly, he will have a clear conception of this exercise.

For the sake of convenience, this Exercise is called the "Hammock Swing." It should be noted that the whole abdominal cavity and its contents swing from side to side. The action on the bowels is most effective.

N.B.—In cases of enteroptosis or of prolonged constipation it is better to do this exercise as *Special* exercise No. 1 on page 71.

II. Tensing and Retracting

Lie flat on ground, legs straight. Place both hands under the small of back, palms downwards. Raise the head (chin well down), then raise the shoulders and the legs keeping knees stiff, the feet coming up about 12 in. to 18 in. from floor. The body is balanced on buttocks and hands—the hands being placed backwards or forwards so as to regulate balance. Try to bring head and feet as near together as possible (keeping back round, not hollow) without jerking and without bending knees, until complete contraction of abdominal muscles is obtained. Then lower shoulders and feet simultaneously to the floor, keeping knees stiff on the downward movement. When body and feet are resting on floor *retract the abdomen fully, contracting the buttocks simultaneously.*

In his "Physiology of Bodily Exercise," Dr. Fernand Lagrange says, on page 277 :—

> "It is to the abdominal muscles that is assigned the office of flexing the pelvis on the trunk or conversely of the trunk on the pelvis. . . . Firm and vigorous abdominal muscles form the best 'girdle against obesity.'"

In this exercise, therefore, it will be apparent that both these objects are achieved. This exercise is of great importance in developing all the muscles that cover the front of the abdomen. It is a strenuous movement when done completely. *At first, therefore, it is advisable to raise only the head and not the shoulders, and keep feet on floor, or raise the feet only a few inches (especially for stout and delicate persons).* At the end of a week raise head and feet a little higher, and so on, avoiding strain, until complete contraction is obtained.

It is better to inhale slightly on the upward movement and exhale on the downward movement, then retract abdomen, contracting buttocks without raising the chest. Pause for a second or two. Then inhale and repeat movement.

Don't hold the breath.

Don't do this exercise as a breathing exercise.

At the end of a few weeks, when feeling stronger, the following movement may be added: Raise shoulders and legs as above, pause for a second, then try to raise shoulders and legs still further; lower, and complete the movement.

The action of the abdominal wall is something like the opening and shutting of a concertina.

Begin by doing this movement six times, gradually increasing up to eighteen times.

NOTE.—In cases of hernia (rupture), it is necessary that the truss or support should always be worn when doing this and all other exercises.

For the elderly and the stout person, the use of a thick pillow under the head is advisable in Exercises I., II. and III.

N.B.—In cases of enteroptosis or extreme muscular weakness it is better to do this exercise as *Special* exercise No. 2 on page 72.

III. Pumping

Lie flat on back with muscles relaxed; by muscular effort, *gently* expand the abdominal wall (this is accomplished by contraction of the diaphragm); then by vigorous converse movement draw in the belly. It will be noted that this exercise is not dependent upon excessive chest action at all. During its execution no special breathing rhythm is necessary. Assist the inward movement of the abdomen with the hands if necessary. Keep the shoulders and hips firmly on the floor. There should be no heaving or movement of the shoulders; no forcing of the ribs this is purely a diaphragmatic movement.

Don't hold the breath.

Don't do this exercise as a breathing exercise.

At first it is better to inhale slightly as the abdomen goes forward, and exhale as the abdomen is pulled in. After a little practice several cycles can be performed in the one breath.

The main object of this movement is to increase the peristaltic action of the bowels. Like Exercise I., it can be done by the most delicate women, as well as by the strongest athlete. As the muscles tone up, the force with which the inward movement is done is increased. This exercise gives a large amount of internal massage with a comparatively small amount of muscular effort.

Repeat twelve times; pause; then repeat another twelve times slightly quicker.

N.B.—In cases of enteroptosis or obstinate constipation it is better to do this exercise as *Special* exercise No. 3 on page 75.

IV. Lateral Press

This exercise is for the oblique and transversalis abdominal muscles—two very important muscles which compress the viscera and flex the thorax. It is most beneficial to the liver, alternately squeezing and releasing this organ.

Stand with feet some 6 in. apart, toes turned out slightly. Place hands on hips, thumbs back. Bend slightly forward from the shoulders—not from the hips. Now try to retract the lower abdomen, and holding it retracted, lean well over to the left side, contracting the muscles of the left side forcibly, but keeping chest muscles loose. If any difficulty is found in relaxing the chest, drop arms loosely by sides. Raise left heel off the ground, pressing weight hard on toes, and forcing left hip up. Keep legs straight all the time—knees stiff. Reverse to right side. Repeat 40 times—20 right ; 20 left.

This exercise is done slowly and steadily without jerking. Breathe quietly and deeply, in and out through the nostrils.

Don't hold the breath.

Three or four movements from side to side can be done on the inhalation, and three or four on the exhalation, after a little practice.

Sir Arthur Keith, in his Hunterian Lecture * on "Man's Posture," speaking of the transversalis muscle, says :—

"The supporting structures are the muscles of the belly wall ; particularly is the transversalis muscle important in this respect ; it is a living belt which girds the loins."

* *British Medical Journal*, April 7th, 1923, p. 558.

V. Retraction and Recoil (Cat-Arch)

Kneel on a small pillow or mat, and place both hands on floor, fingers spread as in Fig. 29. Now, while breathing quietly, retract the abdomen fully, at the same time hollowing the back. By a further muscular effort, bring the breast bone nearer the pelvis, squeezing in the abdomen to the greatest possible extent; elbows stiff. This latter part of the exercise is brought about by arching the spine as a cat does when it stretches itself, with the abdomen tucked in, as in Fig. 30. As back is arched, lower head; as back is hollowed, raise head.

This completes the movement, which has to be repeated slowly at first, keeping the whole of the muscular apparatus in a state of tension. As facility is acquired, the rapidity of movement can be slightly increased.

If this exercise is done sideways to a mirror, so that the contour of the back is visible when the head is turned towards the mirror, it will be seen that a continuous undulatory movement passes up and down the spine, as the spine is alternately arched and hollowed.

This is a full extension and contraction movement.

This exercise brings into play all the muscles of the abdomen. It has a very beneficial effect in imparting pliability to the spine.

In this exercise *inhale as the back is hollowed, exhale as the back is arched.*

Begin by doing this movement six times, gradually increasing up to eighteen times.

Stout persons, the elderly, and those with high blood pressure, should do this exercise in position shown in Fig. 31 (*not* in the kneeling position).

LIST OF GRAMOPHONE TUNES FOR SUITABLE EXERCISES

The Exercises in this book may be done to music if desired, the number of movements being varied to suit the gramophone record or to suit a portion of the record. But it should be remembered that the length of a particular record bears no relationship to the time occupied in the performance of the particular exercise. The following records will be found appropriate :—

Exercise I.—March, or a good fox-trot.

Exercise II.—Any waltz (preferably slow Hawaiian).

Exercise III.—Waltz for beginner ; afterwards fox-trot.

Exercise IV.—Same as II.

Exercise V.—Any one-step or slow march.

Exercise VI.—March.

Exercise VII.—Not done to music.

RESULTS OF EXERCISES

As an example of the efficacy of these exercises these Case Records of two of my patients are given here. The photographs facing this page are those of a man of 51 years of age, who in the course of six months obtained the following results :—

	Feb. 1932.	July 1932.	Loss.
Waist . . .	44½ in.	38¼ in.	6¼ in.
Weight . . .	12 st. 10 lb. (178 lb.)	11 st. 10 lb. (164 lb.)	14 lb.
			Gain.
Chest expansion .	1 in.	2½ in.	1½ in.
Lung capacity .	200 cub. in.	285 cub. in.	85 cub. in.

The photographs facing page 71 are those of a man of 42 years of age, who in the course of twelve months obtained the following results :—

	May 16, 1933.	May 16, 1934.	Loss.
Waist . . .	53 in.	35 in.	18 in.
Weight . . .	19 st. 8 lb. (274 lb.)	11 st. 1 lb. (155 lb.)	8 st. 7 lb. (119 lb.)
			Gain.
Chest expansion .	2½ in.	4 in.	1½ in.
Lung capacity .	130 cub. in.	240 cub. in.	110 cub. in.

In both cases, of course, the carbohydrate content of the diet was greatly reduced.

CHAPTER III

SPECIAL EXERCISES

THE following three exercises are specially indicated in cases of Enteroptosis :—

No. 1.—This is the exercise previously described as Exercise I.—Hammock Swing, modified as follows: Rest the feet on a hard pillow or suit case about 4 inches thick. Do not hollow the back ; keep the shoulders on the floor. Raise the buttocks about 2 inches from the floor, and tilt the pelvis upwards. When in that position repeat the Hammock Swing movement as detailed in Exercise I., pp. 60 and 61.

SPECIAL EXERCISE No. 1.—MODIFIED HAMMOCK SWING.

FIG. 37.

Special Exercise No. 2.—Pelvis Tilting

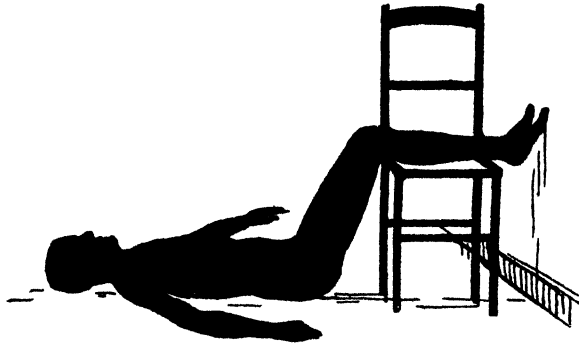


Fig. 38.—First Position.

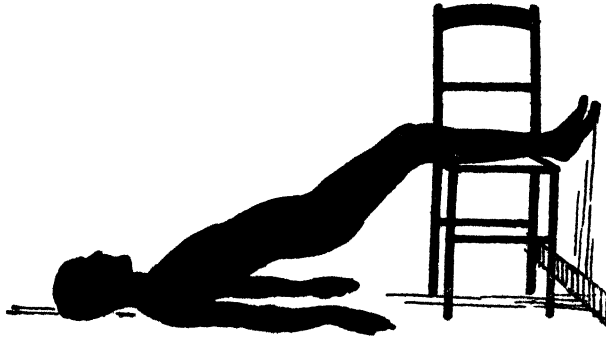


Fig. 39.—Second Position.

Note.—A small pillow may be placed under the head, if desired.

No. 2.—Lie on the back on the floor as shown in Fig. 38. Rest the legs on a chair so placed that the soles of the feet will touch the wall. Now tilt the pelvis upwards, as shown in Fig. 39, contract the muscles of the buttocks and belly simultaneously, and exhale. Return buttocks to the floor. Repeat the movement six to twelve times.

No. 3.—Lie on the back, draw up the knees, keeping the feet flat on the floor, as shown in Fig. 40. Put a hard thick pillow under the buttocks, and tilt up the pelvis, as shown. Carry out the movements of Exercise III. —Pumping, as described on p. 64.

Repeat fifteen to twenty times.

NOTE

These three exercises are additional movements, to be substituted for Exercises I., II. and III., described on pp. 60 to 64, and the remaining four Exercises are then to be performed.

Special Exercise No. 3.—Pumping.

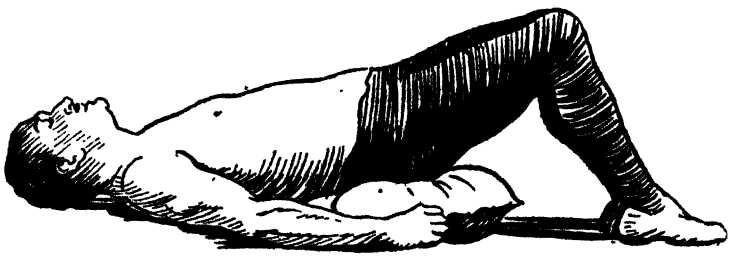


Fig. 40.—A small pillow may be placed under the head, if desired.

CHAPTER IV

OCCASIONAL EXERCISES

THE remedy for undue deposition of fat in the abdominal region, as well as for lack of intestinal activity, is *constant movement*. By constant movement I mean the retraction and release, and also the rotation, of the belly wall periodically during the day. For example, a man may be standing waiting for a 'bus for a few minutes. Instead of wasting that time, perhaps fretting and fuming over the delay, he can, as I have already suggested in my chapter upon abdominal control, quite imperceptibly retract and release his abdominal wall in such a way as effectively to stir up the abdominal contents, and thus help to prevent sagging and stagnation. Similarly, when a man is sitting in his office chair he can retract and release his abdominal wall backwards and forwards, and if he lets the chair-back support his buttocks rather than his shoulders, he will find that automatically he sits in the correct posture—with his belly wall tucked in, not falling in a heap on his thighs.

Again, when lying down in the warm bath, it is quite simple and easy to press the toes against the end of the bath and the shoulders against the head of it, and then, by contracting the muscles of the buttocks firmly, it is possible to get a large measure of abdominal contraction. This control should be held for a second or two, and the muscles then relaxed. The movement may be repeated half a dozen or a dozen times.

Whilst lying in bed certain exercises can be done quite efficiently, *e.g.*, Exercises I. and III., and Exercise II. if feet are not raised.

A useful movement can be carried out when walking in a leisurely way. Retract and release or rotate the abdominal wall, in and out, regularly and rhythmically with each alternate step. This is quite imperceptible to passers-by.

Train travelling can be made much less fatiguing if correct postures are maintained throughout, and if there is the occasional retraction and relaxation of abdominal wall. It should be noted that Exercise IV. can be performed in any standing position, without attracting notice, especially if the arms hang naturally by the sides.

It is not intended that this "constant movement" should be used as a substitute for the few minutes' regular vigorous exercise recommended elsewhere in this book. Rather is it something supplementary, something which, in case of emergency, is much better than no exercise at all, and something which is always a useful adjunct to the routine exercise prescribed.

CHAPTER V

APPLICATION OF SYSTEM OF ABDOMINAL CONTROL

THE question has now to be considered : To whom does this system apply ? It applies particularly to the following :—

1. To business men whose time is so fully occupied that they must, of necessity, have some system of exercise of a " tabloid " nature.
2. To all those men and women who suffer from constipation or flatulence.
3. To delicate people trying to build up their strength by dietetic measures alone—and often trying unsuccessfully.
4. To all those who suffer from digestive troubles of any kind.
5. To women after pregnancy.
6. To post-operative cases.
7. To athletes, many of whom, despite the great amount of general exercise they take, suffer from digestive disorders, because they have built up muscular strength while neglecting their abdominal hygiene.
8. To ex-athletes, who in middle age tend to become loaded with layers of fat, particularly around and in the abdominal region (notice the ex-athletes acting as officials at any sports meetings, boxing contests, etc.).

DAILY PROGRAMME FOR HEALTH INSURANCE.

		Time.
On rising	Gargle throat.	10 seconds.
	Take half a glass of cold water followed by a hot drink.	1 minute.
Toilet.	Use a 10-inch footstool. Try to empty bowels at least twice daily.	
When Shaving.	Stand on outsides of feet to prevent fallen arches.	
Exercises.	5 to 7 minutes. If pressed for time do exercises in the bath.	7 minutes.
After bath.	Holding sides of bath, squat on heels 3 times straightening knees fully after each time.	6 seconds.
Breakfast.	Fruit (preferably raw). Tea or coffee, toast and marmalade or honey.	
Lunch.	Light lunch—meat, fish or fowl, with plenty of salad—tomato, celery, beetroot, etc., followed by fresh or stewed fruit. No puddings.	
6.30–7 p.m.	(Unless teetotal) first drink of alcohol—sherry or whiskey and soda; not cocktails.	
Dinner.	Full dinner. No puddings.	

Maximum time spent on health in 24 *hours*—8 *minutes* 16 *seconds.*

Don't sag.	Stand with third button of waistcoat most prominent.
	Sit with buttocks well back.
	Walk from hips not from knees.
	When walking in good air, take a few deep breaths from time to time.

Don't wear tight collars

Note.

The Author will be pleased to reply personally to any questions regarding the System of Exercise described in this book, if any reader sends a stamped and addressed envelope. The Publishers will forward such letters if sent to their care.

MR. F. A. HORNIBROOK is now prepared to give Special Instruction in his System of Exercises. BY APPOINTMENT ONLY.

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APPENDIX

NATIVE DANCES

THE following evidence is produced to show the nature and extent of native dancing among uncivilised peoples :—

Dr. A. C. Haddon, in the reports of " The Expedition to Torres Straits," says :

Page 290, Vol. IV. : " The natives have always been very fond of dancing, and as the dances are of a very energetic character they have considerable value in exercising the muscles of the body and limbs. They were important social events, and gave opportunities for the girls to judge of the activity and stamina of the young men."

Pages 22–3, Vol. V. : " It was the custom for the young women to propose marriage to the young men, but this has been interdicted by the missionaries, although there is not the least objection to it from a moral or social point of view ; indeed, this custom may have given a certain advantage to the women. . . . A young man who was a dancer would find favour in the sight of the girls. This can be readily understood by anyone who has seen the active, skilful, and fatiguing dances of these people. A young man who could acquit himself well in these dances must be possessed of no mean strength and agility, qualities which everywhere appeal to the opposite sex."

Dr. Haddon also supplies the following note (from Dr. E. Grosse) :—

" The characteristic of the dance is the rhythmical ordering of the movements. There is no dance without rhythm. The dances of savage or the hunting-folk, as Dr. Grosse prefers to call them, fall into two groups : the mimetic and the gymnastic. The mimetic dances consist of rhythmical imitation of animal and human motions, whereas the movements in gymnastic dances follow no natural original. . . . The pleasure of strong and rhythmical movements, the pleasure of imitation, the pleasure of giving vent to the feelings—these factors give a complete and sufficient explanation of the passion which primitive folk have for dancing."

Mr. Herman Melville, in "Typee," thus describes the dances of the natives of the Marquesas :

Pages 190–1 (Oxford University Press Edition) : "The young girls very often danced by moonlight in front of their dwellings. There are a great variety of these dances, in which, however, I never saw the men take part. They all consist of active, romping, mischievous evolutions, in which every limb is brought into requisition. Indeed, the Marquesan girls dance all over, as it were ; not only do their feet dance, but their arms, hands, fingers, ay, their very eyes seem to dance in their heads. In good sooth they so sway their floating forms, arch their necks, toss aloft their naked arms, and glide, and swim, and whirl, that it was almost too much for a quiet, sober-minded, modest young man like myself. The damsels wear nothing but flowers and their compendious gala tunics, and when they plume themselves for the dances, they look like a band of olive-coloured Sylphides on the point of taking wing."

Dr. C. G. Seligmann, in "The Melanesians of British New Guinea," says :

Page 154 : "The rhythm of these dances is further exemplified by the movements of the girl dancers, which consist essentially of a slow rocking of the pelvis on the thighs, each leg being alternately slightly flexed and the heel being lifted from the ground. At the same time the muscles of the back give a rotatory movement to the pelvis, causing the petticoat to swish from side to side. When dancing in columns, the movement is usually slow and dignified, but when one or two girls dance by themselves behind, or at the side of the columns, it is customary for them to dance so violently that the component strips of the petticoat, tied over the right hip, fly up in a spray of fibres, allowing the tattoo on the buttock and thighs to be seen."

Mons. Adolphe Louis Cureau, in "Savage Man in Central Africa," says :

Page 260 : "Elsewhere the dance is a caress ; a song proceeds by short chromatic phrases, in a minor mode, and with dropping inflections, while the ballet-dancers advance and retreat in turn, sometimes down the front, and again in oblique lines. Their faces and arms take no part in the action, and the mask simply shows a desire not to make any mistake. Their elbows are held against their sides, whilst

their hands beat time; the whole expression and action is in the pelvic region and the legs. The waist undulates, the hips move rapidly or twist slowly, the knees flex in quick time, while the feet touch the ground with the end of the great toe, alternately in front, behind, or at the side. There is no marked gesticulation and no vivacity; all the motions are supple, cadenced, harmonious, encircling, languorous, and delicate. The coryphees adapt the figures of the dance to the amorous and plaintive melody, and move back and forth in the gleam of the dying torches like black Bacchantes."

Mr. George T. Basden, in his book "Among the Ibos of Nigeria," says:

Pages 131–4: "Dancing is the great national pastime, and it is practised by everybody capable of movement. There are many forms—for boys, for girls, for men, and for women, and for mixed companies, the last being especially associated with religious observances and festivals. It is the religious element which distinguishes the set forms of dancing from those which are the outcome of the emotions.

"The stereotyped set dances are all performed by professional men, and they are very elaborate and extraordinarily difficult and exhausting. The movements are perfectly rhythmic, and the time is set by music. . . . The instrumentalists squat on the ground in no prescribed order, with neither programme nor conductor. Presently one of the musicians sounds a few desultory notes, which gradually evolve into a recognised melody, the others join in, and time and tune are thus established. The dancers range themselves and begin slow rhythmic movements, unconsciously swaying their heads in time with the music. As the dance proceeds they appear intoxicated with the motion and the music, the speed increases, and the movements become more and more intricate and bewildering. The dancers work themselves into a veritable frenzy and the spectators keep silence from sheer excitement. The twistings, turnings, contortions, and springing movements executed in perfect time, are wonderful to behold. Movement succeeds movement in rapid succession, speed and force increasing, until the grand finale is reached. By this time the onlookers, as well as the dancers, are almost breathless. Then, in a flash, music and dance cease abruptly, the performers remaining rigid in their last pose. For a second absolute silence prevails, followed by an outburst of applause. The effect of the sudden arrest of music and motion cannot be described; it breaks upon one with such an

unexpected shock. The dancers are streaming with perspiration and quite exhausted with their efforts. The sign for the dance to end is given by the chief drummer, the dancers themselves, naturally, having a pretty clear idea when to expect it. For these set dances, *e.g.*, those executed by the 'Guinea-fowl Dancers,' the physical strength required is tremendous. . . . The practice of such dancing leads to a wonderful development of the back and abdominal muscles. Moreover, the movements are free, there is nothing rigid about them, and they produce no sign of 'physical exercise' stiffness. Every movement is clean, sure and decided, showing absolute control of the muscles. . . . In all native dances each man (and woman) acts independently of his fellows and yet fits into his proper place in the general scheme. When men and women are dancing in company they do not even touch hands. It is contrary to etiquette for a man to touch a woman, and any infringement of the rule may meet with stern rebuke. As a matter of fact, each person becomes so completely absorbed in the dance that any interference would give rise to emphatic protest. . . . Some of the movements are peculiar, as when the lower limbs are kept perfectly rigid the feet are not lifted from the ground, but all progression is made by swaying the body only, and by sinuous movements."

Mr. P. Amaury Talbot, in his book "In the Shadow of the Bush," says:

Pages 293–5: "All other pastimes pale before the attractions of the dance, which to the Ekoi (natives of Nigeria) is one of the main occupations of life, and, as with the Greeks of old, provides an outlet for the dramatic instinct and religious fervour of the race. It affords one of the means of expressing as perfectly as possible that otherwise inarticulate sense of the mystery of existence, the power of supernatural influences which enfold them, the ecstasy of joy in life—of youth and strength and love—of the deeper and more poignant feelings so far beyond expression by mere words. . . . Every atom of the body dances, but the point which distinguishes an accomplished dancer from others is the never-ceasing wave-like ripple which runs down the muscles of the back and along the arms to the finger-tips. . . . Whatever may be the difference of opinion as to the merit of Ekoi dances from an æsthetic standpoint, there can be none as to their interest from an anthropological one."

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